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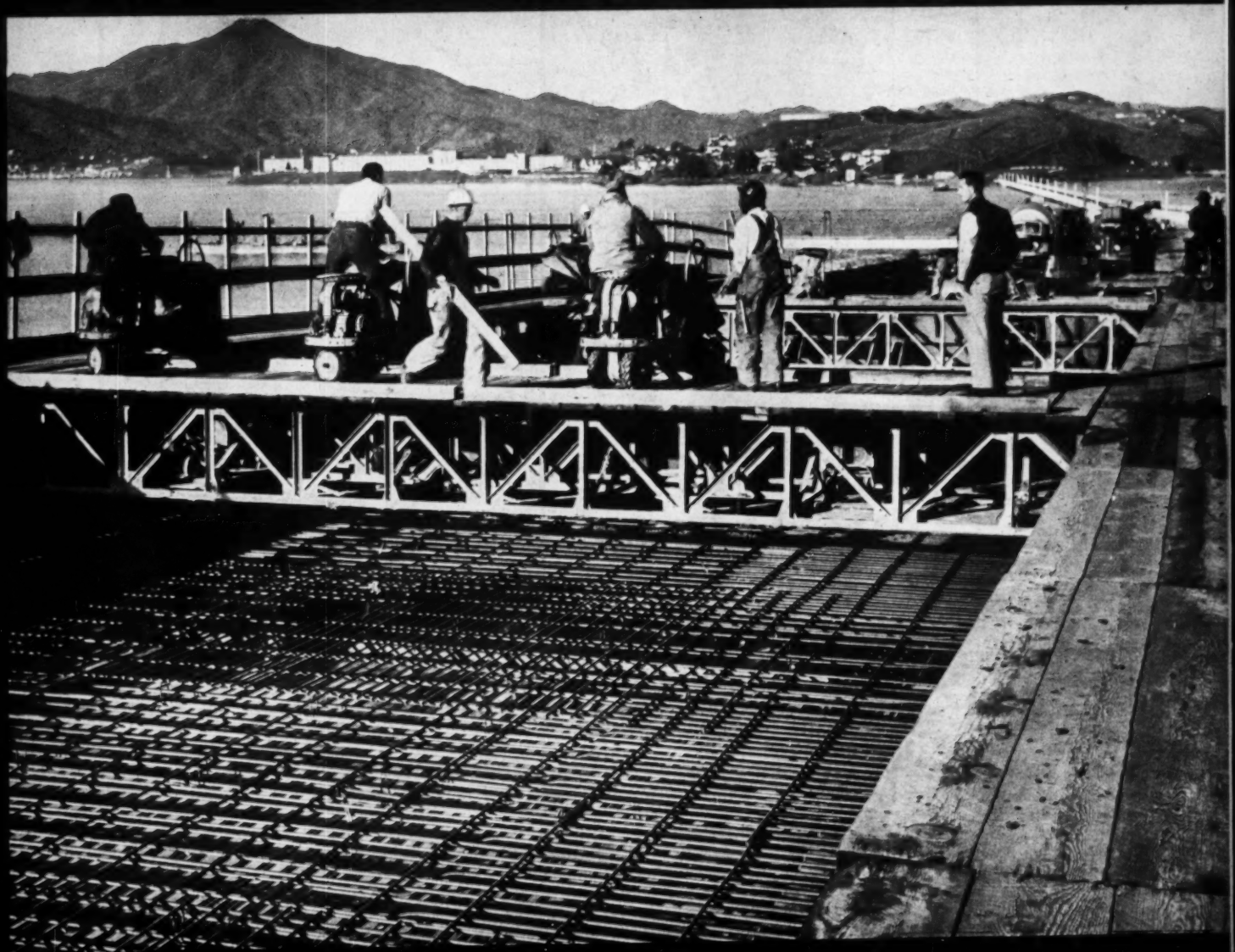

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THE WORLD'S LARGEST SPHERE ...A HORTONSPHERE OF COURSE

Here's the world's largest sphere, 225 feet in diameter, built at West Milton, New York, by CB&I for testing the prototype of an atomic power plant for U.S. Navy submarines. In addition to serving as a power plant building, it is also designed as a pressure vessel capable of containing the radioactive fission products in the remote event that all reactor controls fail simultaneously.

The sphere, a Hortonsphere® of course, was fabricated and erected by CB&I's experienced personnel for the United States Atomic Energy Commission, and is part of the facilities of the Knolls Atomic Power Laboratory operated by General Electric Company. The unusual welded plate structure is another of many firsts for Chicago Bridge & Iron Company.

FACTS ABOUT THE WORLD'S LARGEST HORTONSPHERE

- *More than 25 times the volume of any sphere previously built.*
- *225 ft. in diameter and stands higher than an 18 story building.*
- *Twenty-six supporting columns.*
- *Approximately 1,000 steel plates in the shell and columns.*
- *Five miles of welding, completely x-rayed.*
- *Access to Hortonsphere is through two air locks, made of 16½ ft. diameter spheres.*

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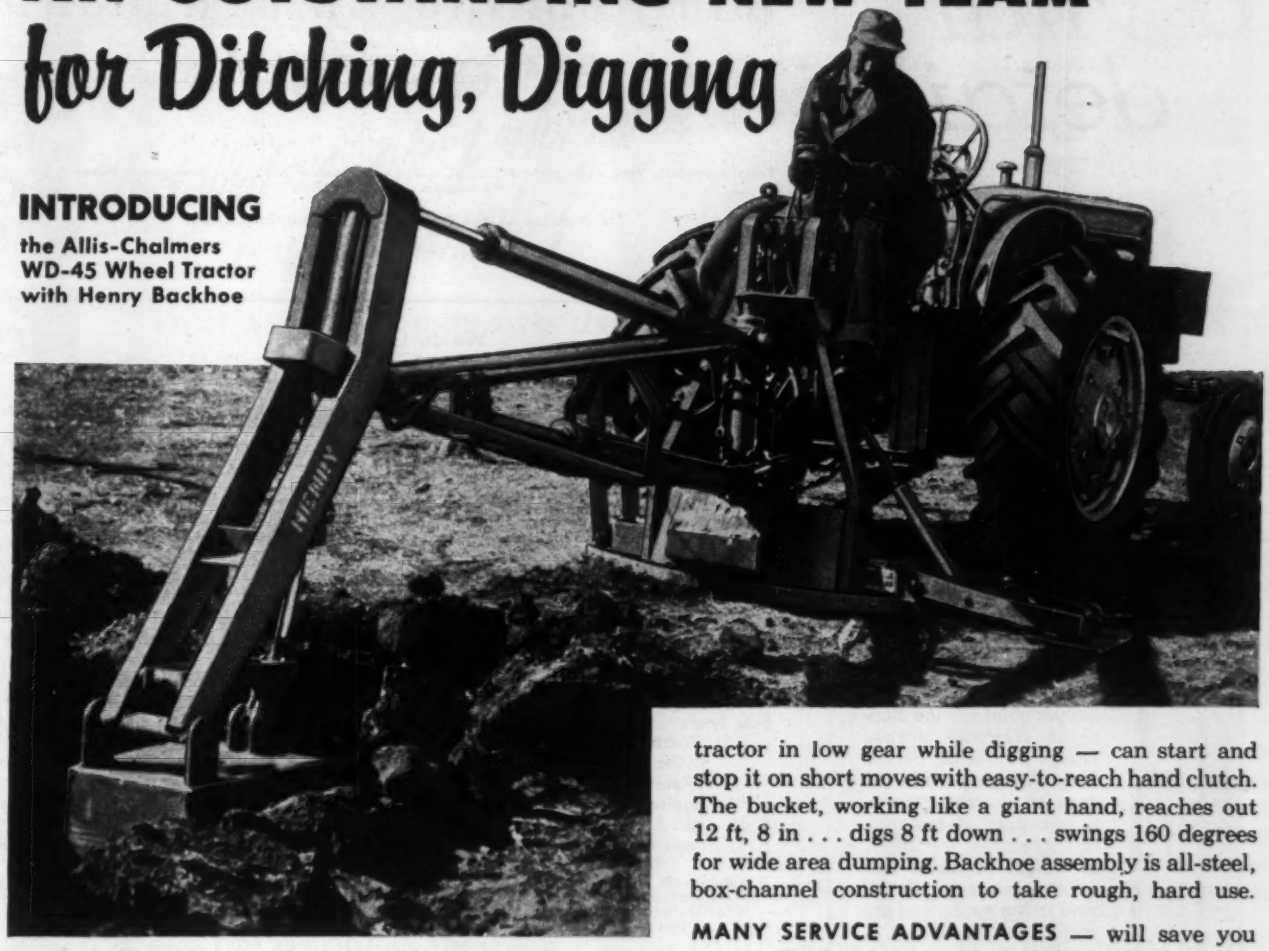
INTRODUCING
the Allis-Chalmers WD-45 Wheel Tractor with Henry Backhoe



Whether it's digging ditches, trenches, culverts, footings or foundations, you'll find this team's power, mobility and versatility ideal for use on any dirt-moving job. Check the features that make this machine a big performer at low cost:

PLENTY OF POWER — for big-scale production. The WD-45 engine with POWER-CRATER design develops over 45 belt horsepower . . . to give you more power per dollar . . . more work capacity than other tractors of this type. Thousands already in use have given the WD-45 nationwide fame as a performance leader.

PLENTY OF WEIGHT — 5,325 lbs distributed right, give you the added traction and stability you need for tough, heavy digging and backfilling. It's a combination of a big, rugged wheel tractor and heavy-duty hoe to give years of continuous service.

MANY OPERATING FEATURES — let the operator do an efficient, thorough job in less time. With two-clutch control, the operator saves time because he can keep tractor in low gear while digging — can start and stop it on short moves with easy-to-reach hand clutch. The bucket, working like a giant hand, reaches out 12 ft, 8 in . . . digs 8 ft down . . . swings 160 degrees for wide area dumping. Backhoe assembly is all-steel, box-channel construction to take rough, hard use.

MANY SERVICE ADVANTAGES — will save you money. Engine features like exhaust valve rotators, removable cylinder liners, pressure lubrication give long life and lasting performance. Backhoe features, like replaceable bushings on all wear points, provide easy maintenance.

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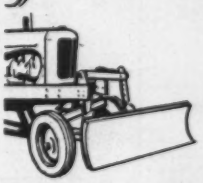

See the world-famous WD-45 with Henry Backhoe at your Allis-Chalmers industrial dealer, or write direct to the company for literature.

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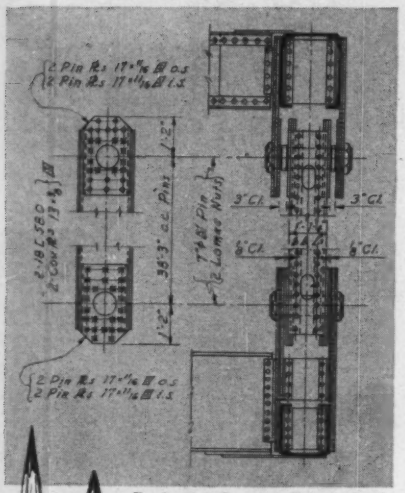
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

a vital detail



Engineers: Parsons, Brinckerhoff, Hall & Macdonald

This detail of a truss hanger joint for the Sunshine Skyway across Tampa Bay at St. Petersburg, Florida, permits the span to absorb deformations caused by temperature changes, variations in weight of traffic and other causes—a detail vital to the success of the project.

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Robert F. Boger
Publisher

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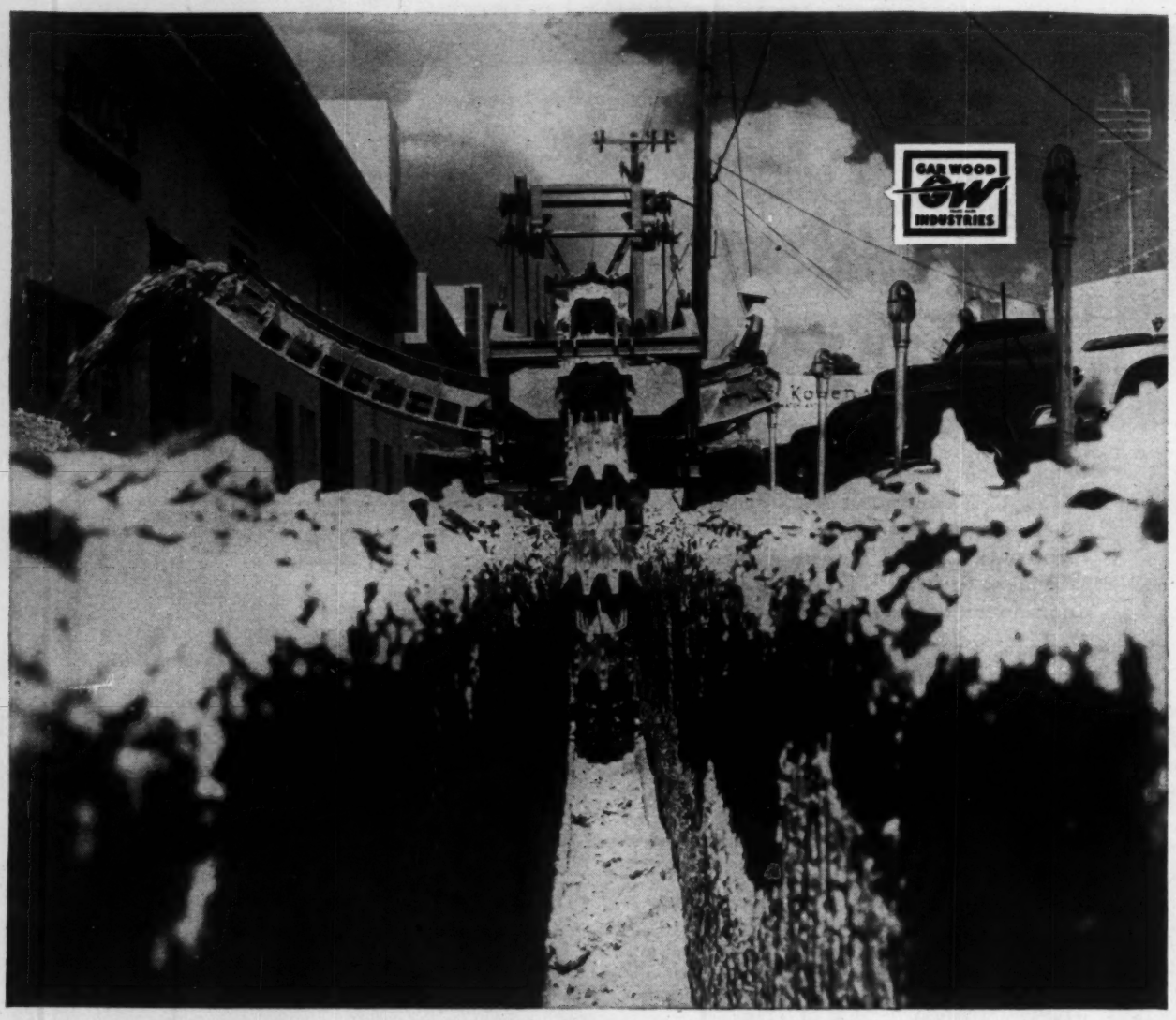

NEW BUCKEYE 315 HELPS PUT CONTRACTOR 100 DAYS AHEAD OF SCHEDULE ON CORAL GABLES JOB

SET RECORD DIGGING

Thru solid coral rock on Florida sewer jobs

"Oolite" is the technical name for the coral rock upon which many of the cities of southern Florida are built. It is tough, hard material—difficult to dig and unusable as backfill without crushing. But it has been successfully handled by Buckeye ditchers for over 25 years! . . . In the photo at top: A Buckeye 315 has averaged 1,700 ft. of trench, 24″ wide and from 4′ to 6′ deep, every day—working on busy city streets in Coral Gables, Fla. The phenomenal performance of this machine has enabled the contractor, Morris Prosser, Inc., to gain over 100 days on his original estimated schedule with every expectation of finishing the job in *less than half* the time allowed. Because the action of a Buckeye ditcher breaks the coral into fine pieces, it is possible to use material as backfill without crushing—a considerable saving for the contractor . . . Another example of Buckeye's ability to cut costs by faster, more efficient performance.

No. 555

GAR WOOD INDUSTRIES, INC.

WAYNE, MICHIGAN

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today—it's a bigger catch with MUSCLES OF STEEL

Five billion pounds of fish yearly. It's a catch that would make the oldtime Gloucester fisherman gasp—yet it's all in the day's work for America's modern fishing industry. And it's a job that couldn't be handled without the aid of *muscles of steel*—indispensable wire rope.

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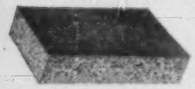
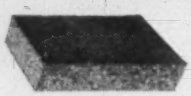
In general these products are specially designed for structures which control or contain water. Preformed joint fillers used in conjunction with rubber waterstop fill and seal expansion or construction joints so effectively that considerable hydrostatic pressure on one surface of the structure is not allowed to come through the joint.

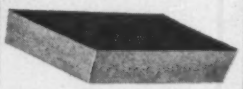
EXPANSION JOINT FILLERS



CORK Premolded Joint Filler has a high recovery factor (95%) after compression — is non-extruding and inconspicuous in mass concrete structures. Keeps the joint filled at all times.



SELF-EXPANDING CORK is specially treated to expand to 150% of original thickness to insure positive joint filling where concrete shrinkage problems are present. Non-extruding . . . and resilient.



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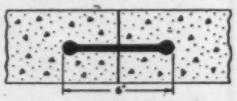
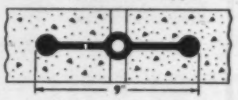
Servicised Waterstop is flexible and elastic, with a very high tensile strength — easy to install and once in place withstands contraction, expansion and shearing movement to insure a positive permanent watertight seal against hydrostatic water pressure.

Two types — Flat Dumbbell and Hollow Bulb. Both types meet all standard engineering specifications. Waterstop also available in fabricated ell's and tee's.



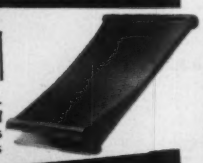
Flat Dumbbell Type



Hollow Bulb Type

NEW! SPLIT DUMBBELL TYPE

Servicised Split Type Waterstop spread open and nailed to inside of bulkhead. This eliminates slotting — saves time and labor.



Saves time, labor — eliminates split bulkheading. One half of waterstop width is split to permit fastening to bulkhead to form a "T" (see illustration). After pour, bulkhead is stripped, and divided section joined by stapling or with rubber cement. Also lower cost field splicing using Servicised Union.

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Sealing at footing.

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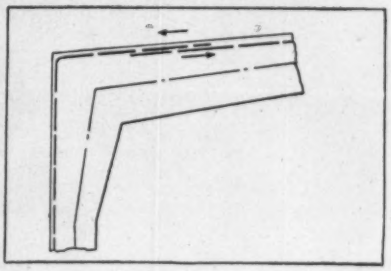


Where to Place Bar Splices

SIR: I would like to elaborate on the matter of continuity splices, since Richard C. Gerke has raised a question (ENR Jan. 13, p. 10).

In the original rigid frame, the depth of girder placed the relatively short length of splice in an area where the bars were acting at right angles to each other, depending on piece of plain concrete to carry tensile stresses around a corner. This provided no continuity of reinforcement in an area of maximum tension.

Gerke asks if all splices are to be enmeshed on a straight line. Let us say rather that continuity splices of both bent and straight bars should be placed so that lengths of bars provided for lap are acting in a straight line and in opposite directions. Bent bars at corners should be extended into areas where the length provided for lap is acting in an opposite direction to the bar engaged (see above sketch).

Regarding the rotating of the "good practice" retaining wall (ENR Dec. 23, 1954, p. 6), I can conceive of no plane of plain concrete in tension with the bars as detailed. The effectiveness of this wall depends wholly on good bond and sufficient lap between the dowels and vertical stem reinforcement.

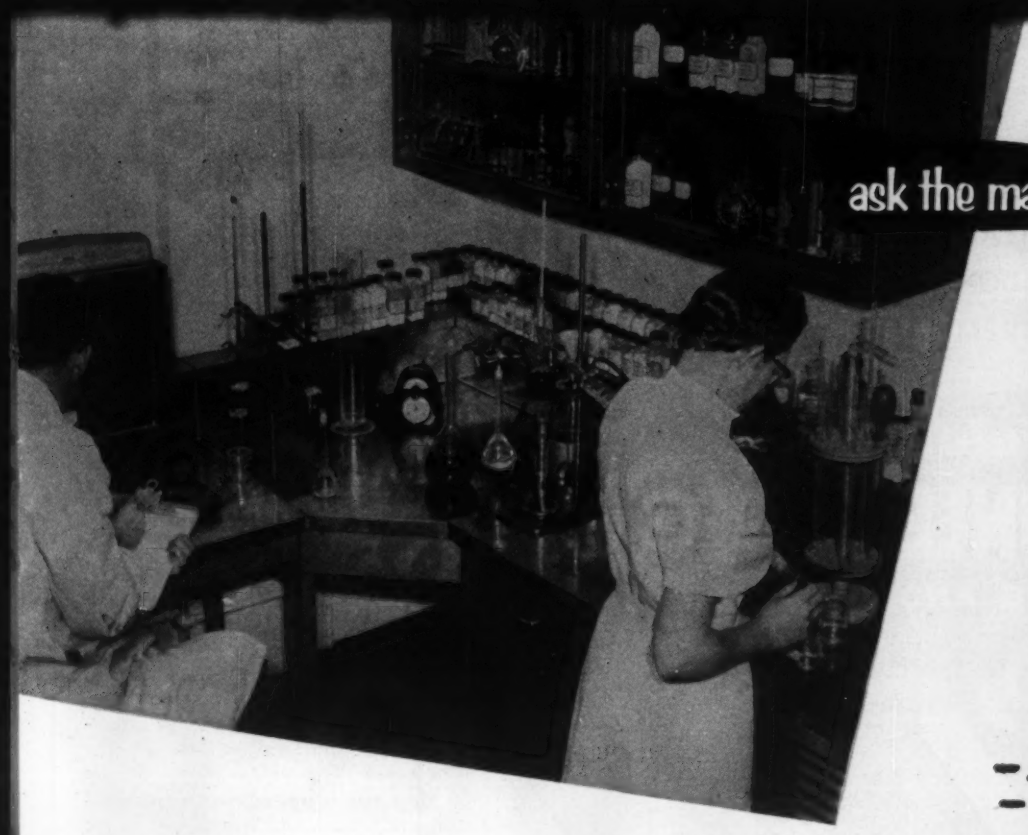
Depths of members and changes in direction of framing, as well as bond stresses, are determining factors in the detailing of splices.

BERNARD S. DIGIOVANNI
Aldan, Pa.

Mackinac Bridge Caissons

SIR: I enjoyed reading the excellent story on the Mackinac Straits Bridge (ENR Jan. 27, 1955, p. 35) until I completed it and found that there was no mention made of our company, which was called in as a sub-contractor to Merritt-Chapman & Scott Corp. to enable them to complete piers 19 and 20 before winter weather stopped the work.

The Chicago Bridge crew (which at maximum force contained 170 men



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and at one time included 80 welders) was assigned the difficult and schedule-controlling task of assembling and welding the prefabricated segments of the caissons into rings, and progressively welding the rings to the 116 ft dia caissons as they were sunk. The crew worked two 10½-hr shifts, seven days a week out in the Straits of Mackinac from Sept. 30 to Nov. 30, completing the job several weeks ahead of the deadline.

We are proud of the part we played in the success of the Mackinac Bridge pier job and think it is worthy of mention.

E. N. Zimmerman
Chicago Bridge & Iron Co.
Chicago

[Editor's Note: Our apologies to Chicago Bridge for an inadvertent omission. The job its crew did in assembling these notable caissons in the rough and deep waters of the Straits of Mackinac is indeed worthy of mention and praise. It was a key factor in assuring success of the entire operation.]

Frame Costs Questioned

Sir: Ralph W. Craig's account of how trussed rigid frames saved money on the new Redfield, S. D., armory (ENR Jan 13, p. 44) stresses the economy of trussed rigid frames as compared with conventional solid-member rigid frames.

The comparison, however, in this case is not a fair one. For, since the inside-clearance outline of the frame was a governing condition, the trussed frame should have been 3 ft higher at the eaves to provide comparable inside clearance with the solid frame. Of course, this would have increased the weight of the frame and also added the cost of 3 ft of wall all around the building.

Moreover, the weight difference between the two frames could have been reduced substantially without a corresponding increase in fabrication costs. A welded tapered column made from split wide-flange sections, and a girder section reflecting the change in section modulus requirements across the span, would have slashed the weight of the solid frame drastically.

A closer look at the knee section also might have produced worthwhile savings. My hunch is that a straight haunch instead of a curved flange knee should have been selected. In further defense of the solid-member frame, it must be pointed out also that for comparable bracing of the lower flange or lower chord for lateral sta-

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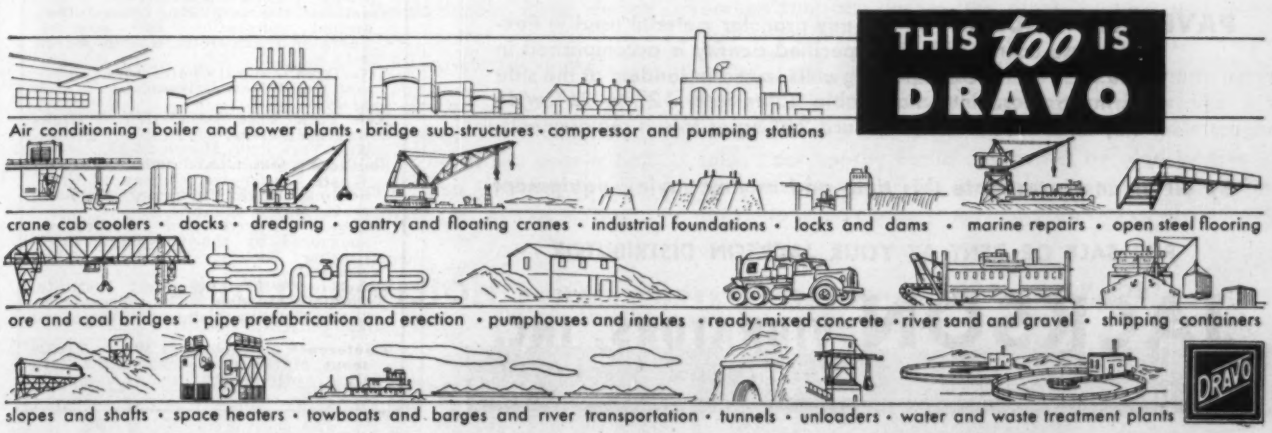
This is just one of many ways Dravo has been serving business and industry for more than 60 years. Dravo considers customer satisfaction essential in all its products and services. DRAVO CORPORATION, PITTSBURGH 26, PENNSYLVANIA.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MACADAM CONSTRUCTION: All around the country on major paving projects the JACKSON VIBRATORY COMPACTOR is being hailed as the most advantageous equipment ever developed for achieving specified density in rock, slag, soil-bound macadam, gravel and sand base courses. Uniform compaction to final density is obtained in rock macadam courses up to 12" in minimum time. The dry fines are quickly vibrated into all voids, filling them chockfull, solidly, from top to bottom of the course. Standard width is 13',3". Working speeds up to 60 FPM, reverse travel: 5½ MPH.

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PAVEMENT WIDENING: In any granular material used in flexible base course widening specified density is accomplished in one pass with the compacting units towed in tandem at the side of the tractor. Interchangeable bases from 12" to 26" wide may be substituted for standard 26" bases to suit requirements.

By all means investigate this time and money saving equipment

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READER COMMENT

bility, the solid frame requires no continuous lower-chord struts with K framing. Increased material and erection costs for these items should be charged to the trussed frame.

After years of experience with rigid frames, a generalization as to where the trussed figure becomes more economical than the solid member in two-hinged frames still escapes me. Much depends on the design loading, the designer's skill, and above all, the local fabricator's and erector's equipment and experience. In any event, the cases where the trussed frame is more economical than the solid frame for clear spans of 100 ft must be rare indeed.

MILTON A. KARP
Structural Engineer
Los Angeles, Calif.

Get Out the Vote

SIR: Engineers are truly wonderful. No problem is too difficult to tackle. When one meets a technical legal problem such as corporations practicing the profession of engineering, the engineers become very democratic and answer the question by voting. We read that the NYSSPE has just voted to permit corporations to •practice "Professional Engineering" (ENR Jan. 20, p. 17).

I believe I am right in thinking that engineers would be shocked if the lawyers, with the political power they have, undertook to answer a technical engineering question by a vote of the members of the Bar.

R. B. MACFARLANE
Macfarlane & Sadler
Engineers, Richmond, Va.

CALENDAR

American Society of Photogrammetry and American Congress on Surveying and Mapping, consecutive meetings, Shoreham Hotel, Washington, D. C., March 6-12.

National Association of Corrosion Engineers, annual conference, Palmer House, Chicago, March 7-11.

American Concrete Pipe Association, annual convention and meeting, Sheraton-Plaza Hotel, Boston, March 9-12.

Associated General Contractors, Roosevelt Hotel, New Orleans, La., March 14-17.

New York State Association of Highway Engineers, Hotel New Yorker, New York City, March 23-25.

Southern Municipal and Industrial Waste Conference, College of Engineering, Duke University, Durham, N. C., March 31-April 1.

Regional Construction Conference, sponsored by the Cleveland Engineering Society, Cleveland, Ohio, April 11.

Concrete Reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., April 11-16.

Conference on Biological Waste Treatment, Manhattan College, New York City, April 13-15.

Moorman builds Buford Dam with "Eucs"

● J. W. Moorman and Son, well known Texas contractor, is using 31 Euclids to move about 4 million cu. yds. of earth and rock at Buford Dam 35 miles northeast of Atlanta, Georgia. This rolled earth fill dam, being built under supervision of the U. S. Army Corps of Engineers, will rise about 200 ft. above the river bed and will be 1,630 ft. long. It's a multi-purpose project that will provide improved navigation in the Apalachicola River during lowflow periods, as well as flood control, water storage for Atlanta and production of hydro-electric power.

Work on the main dam was started in June of 1954 and by January of this year was about 80% completed. In addition to the big yardage of earth fill, over a half million yards of rock must be moved so Moorman is using "Euc" Rear-Dumps and Bottom-Dumps as well as Scrapers. Two Euclid water wagons play an important part, too, in providing the moisture necessary for proper compaction of the fill. A fleet of 16 "Euc" Scrapers with top extensions move loads averaging 16 bank yards on hauls of about 4,000 ft. The Bottom-Dumps and Rear-Dumps are loaded by shovels and draglines in an upstream borrow pit and from stockpiles placed by "Eucs" that worked on earlier contracts for saddle dikes, tailrace and powerhouse excavation.

Yes, Buford Dam is another 100% Euclid earth moving job . . . evidence that leading contractors like J. W. Moorman and Son depend on "Eucs" for their toughest jobs. Your nearby Euclid dealer will be glad to give you facts and figures on the complete line of Euclid equipment and help with your earth moving problems . . see him soon.

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GM GENERAL MOTORS

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From earliest times, mankind has recognized water as the guardian of its safety. The medieval castle relied on its water-filled moat to discourage attack. Today, water is still man's first line of defense against disease and fire.

The vital pipelines which form this first line of defense are the prime concern of farsighted water works officials. More and more of them are turning to LOCK JOINT CONCRETE PRESSURE PIPE on the basis of time-tested performance. The danger of crippling the city's water supply and sanitary facilities through burst or ruptured pipe does not exist in Lock Joint pipelines. The pipe's initial high carrying capacity is permanent, assuring ample water and pressure to combat the hazards of fire.

With Lock Joint you can benefit from these advantages in a virtually ageless pipeline which will require very little, if any, maintenance.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

TESTING PROCEDURE—One result of that controversy over the mysterious action of concrete in the foundations of a Buffalo, N. Y., project (ENR Feb. 24, p. 25) is this: The Buffalo Housing Authority has decided to make appreciably more tests on cores from building foundations before beginning further construction.

HEAD START—Taking a chance that Dayton, Ohio, voters will approve a $20-million school bond issue on May 3, nine architects have agreed to prepare preliminary plans for as many building projects. The architects will work for 1% of construction costs, risking the balance of the usual fee on the outcome of the referendum.

EMBANKMENT FAILURE—A deep sand and clay embankment under a section of the New York Thruway, two miles west of Albany, washed out last week under one side of the highway. Apparently an unusually heavy rain and accumulation of snow in the immediate area was too much for drainage provisions, causing a 20-ft section to give way. An investigation of the failure is now under way pending repair. Traffic is being routed over the mall dividing the dual highway.

STATES RIGHTS ISSUE—There's a storm brewing over Senate Bill 890, which would extend and revise Public Law 845—The National Water Pollution Control Act. Despite a policy declaration about protecting rights of states in the first section of this bill, those concerned with pollution abatement at the state and interstate level read its Section 8 with alarm. Hudson Biery, first chairman of the Ohio River Valley Water Sanitation Compact, contends that the bill would not require consent of the state when the federal government wishes to file suit to secure abatement of pollution.

Says Biery: "Must we have federal control? . . . The bill should be extended as is."

TV HOME SHOW—NBC's new television program, "Home," will feature a model three-bedroom, two-bath house, designed by Jones & Emmons, California architects, and the National Association of Home Builders. The models will be constructed in 50 or more cities. Object: To show that it is possible to build well-designed homes at moderate cost suitable in all parts of the country. Claimed to be comparable to $30,000 and $40,000 houses individually designed and built, the "house that 'Home' built" is expected to cost $17,500 to $20,000 if constructed in quantity. It's a pleasant saving to think about anyway.

These pipe holes stop "chuck holes"

More than 80% of highway surface failures are caused by too much water in highway foundations. The resulting broken pavements and "chuck holes" are dangerous to motorists and create a continuing maintenance problem.

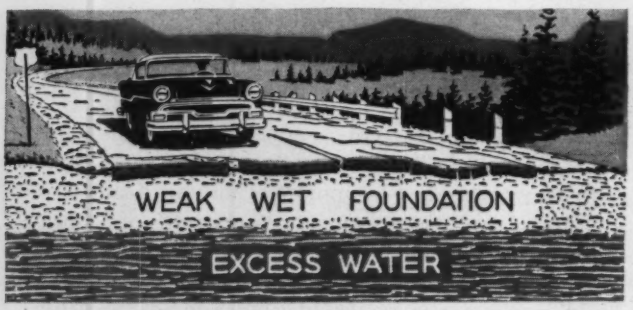
Armco HEL-COR Perforated Pipe has been especially designed to drain harmful ground water. Scientifically placed holes of the right size are drilled on each side of the pipe invert. Water seeps in and is drained away. Highway foundation stays firm and dry.

EFFICIENT, DURABLE. With Armco Perforated Pipe there is no danger of disjointing, even in unstable soils. Individual lengths are firmly connected with a bolted coupling band. There is little or no danger of clogging.

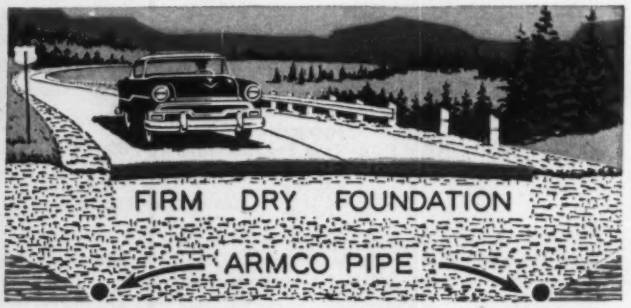
EASY, FAST INSTALLATION. Installation of Armco Perforated Pipe requires a minimum of men and equipment. Here are a few reasons why:

Transportation is no problem. One truck can carry almost a mile of 6-inch diameter Armco Perforated Pipe. Two workers easily lay, line and join the pipe—20-foot sections of 6-inch pipe weigh only 76 pounds. Joining two twenty-foot sections takes only a couple of minutes. Backfilling with the proper filler material completes the job.

Write us for more data. Armco Drainage & Metal Products, Inc., 4535 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



More than 80% of all highway surface failures are caused by too much water in highway foundations. Lack of proper support ruins costly pavements to create driving hazards and an expense to taxpayers.



Placed at the right depth, Armco HEL-COR Pipe removes excess water. Highway surfaces remain smooth for safer, more enjoyable driving. Maintenance costs go down and expensive highway pavements last longer.

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ARMCO PERFORATED PIPE

WASHINGTON OBSERVER

VA officials deny they are planning to require a down-payment in connection with their guarantees of housing mortgages. In fact, they say no such idea is even in the discussion stage. The report has been circulating widely that this was being planned as a way to put a slight crimp in housing starts—which have been running at a rate that suggests the possibility of setting a new all-time record this year.

VA insurance supported about 26% of housing starts last year—and the rate has been close to 30% in recent months.

VA now has authority to require a down-payment before it will guarantee a loan. This discretion stems from language in the new law which says the administrator "may" insure loans up to 65% of the total lent, but not more than $7,500.

•

Top Administration officials like the way housing starts are going. Savings and loan officials, among others, have been worrying government agencies with their own worries about over-building of homes. Housing chief Cole and the President's Council of Economic Advisers have been keeping almost a daily check on the situation, and they are pleased rather than alarmed at the present trend.

But they are having a special check made of vacancies. Census Bureau will make a further check throughout April, May, and June as part of a regular population survey.

•

Building trades unions will lay the groundwork next week for their most ambitious lobbying drive in Congress, with Taft-Hartley, Davis-Bacon and the wage-hour laws as the main targets. Some 1,300 delegates from 45 states will be briefed for the campaign at a legislative conference of the AFL Building and Construction Trades Department scheduled to be held in Washington March 7-10. Then, rank-and-file craft workers will be sent to Capitol Hill to press their views on congressmen.

The building trades want a new federal labor law for construction encompassing all pertinent provisions now separated among T-H, Davis-Bacon, etc. They favor lifting restrictions on the union shop and setting new rules for federal contract work. Particularly they want the eight-hour law amended to require overtime after a 40-hour week instead of the eight-hour day to prevent a seven-day, 56-hour work week at straight time. On Davis-Bacon, the craft unions are seeking amendments to allow fringe benefits to be included in minimum wage rates and enforcement facilities in the Labor Department rather than the contracting agency.

What the unions will get: There won't be any new law for construction. The eight-hour law change, backed by Labor Secretary Mitchell, will likely go through. Davis-Bacon most likely won't be amended; Mitchell doesn't favor opening up the law. He claims the end result would hurt the unions because there would be a concurrent campaign by contractors to make minimum wage determinations subject to court review and in that manner destroy the law's effectiveness.

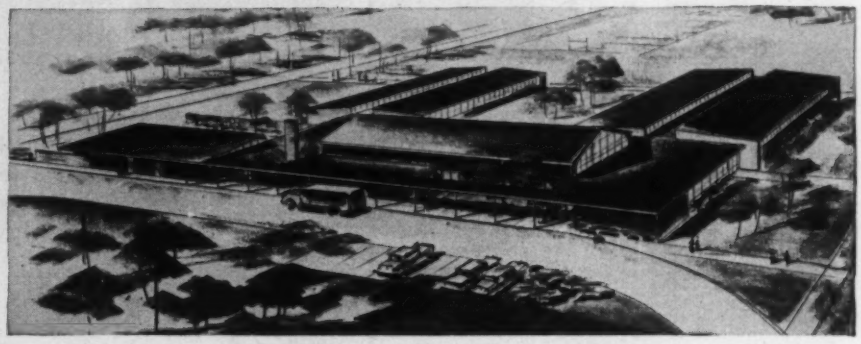
•

Cutback in federal hospital construction is threatened by the Hoover Commission report on medical services, out this week. The commission suggests that authorized Veterans Administration hospitals at Cleveland and Washington, D. C., not yet under construction or contracted for be dropped; and that Public Health Service cut severely its plans for expanded facilities.

The hospital grant-in-aid program is criticized, with efficiency and economy demanded in the recommendations, but money would be continued.

Because **V-LOK** *Reduces Erection Costs*

A school designed with a V-LOK Steel Frame can be erected and under roof in a very few days—using a minimum of skilled labor and equipment to expense against the job. Interlocking structural members require no bolting, riveting or welding — except anchor bolts.

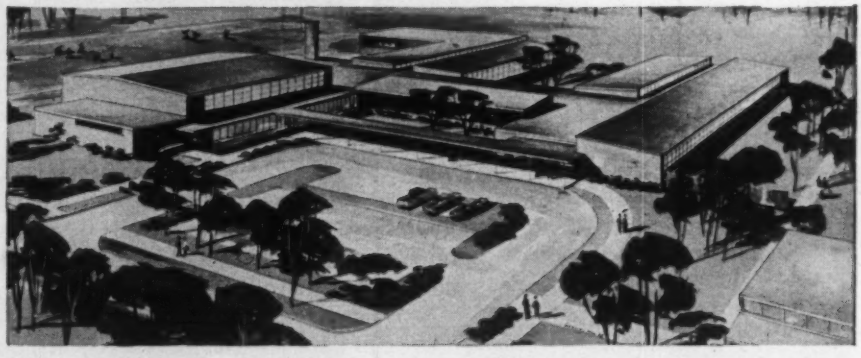


Because **V-LOK** *Gets a School Under Roof Faster*

A school under roof in a few days permits craftsmen to move in and start finishing operations for much earlier occupancy. This speed combined with actual economies—per sq. ft.—puts a School Board definitely over on your side for future expansions.

Because **V-LOK** *Designs Readily Into School Layouts*

With V-LOK—you're the Architect, unhampered in the most modern layouts you want to design. You have adequate spans and loading capacity plus a practical joining of accessory materials and component structural units. Contact us for design standards.



Illustrated here are three of the many V-LOK Schools designed by Walter Anicka of Ann Arbor, Michigan. At the top is the Saline Elementary School, Commermercial Const. Corp., General Contractor.

Second is the Willow Run High School, Birchard & Roberts, Dearborn, Gen. Contractor. Third is the South Lyon High School, A. N. Hickson, Inc., General Contractor, Detroit, Michigan.

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On Schools and Highways:

President Eisenhower Gets Little Support

President Eisenhower's highway and school construction programs are in trouble—bad trouble—in Congress. The Administration lacks a crusader for its programs in a quickly developing political fight, but the Democrats have solid backing for their rival plans.

Sen. Francis Case of South Dakota, ranking Republican on the roads subcommittee, introduced the Administration's highway legislation as a "courtesy." But then he announced he would have to put in another bill to make the President's program fit his own ideas.

On schools, Republican leaders are trying to salvage the President's program by offering to pick up some Democratic ideas on federal grants-in-aid for needy school districts. Otherwise, they say, the President's school plan can't get to first base.

A long, hard fight is developing. Some new programs for expanded highway and school construction still are expected from Congress. But they are likely to come late in the session, and they will be a lot different from the President's proposals.

Opposition to the President's highway plan centers on the proposal for federal financing of the $25-billion interstate system by issuing special bonds of a federal highway corporation to be repaid out of motor fuel tax revenues, pledged for the purpose.

• **Pro and con**—Sen. Harry F. Byrd of Virginia has been the most caustic critic of the Administration plan. He called the White House legislation "pure pork barrel." And he asserted the Clay committee proposals, as written into the bill, "evade federal debt law," "defy budgetary control" and "violate financing principles."

President Eisenhower avoided a commitment on the financing proposal in his highway message. He said he was "inclined to the view" that it would be sounder to finance the program by special bond issues than by an increase in the national debt.

Democrats attack the bond-issue idea on another point—that the interest on the bonds would amount to more than $11-billion. They argue that this money could be better used in building roads.

White House spokesmen tag both the highway bill and the President's school aid plan as reimbursable financing programs to speed construction of needed facilities. Critics, in their turn, label them as "bankers' bills" which would cost too much and, in the case of schools, accomplish too little.

SEN. GORE leads the attack on the President's highway plan.

• **In the hearings**—Sen. Albert Gore, D., Tenn., opened hearings before his roads subcommittee on his own highway bill even before the President's program went to Congress (ENR Feb. 24, p. 23).

SEN. HILL heads the fight for a Democratic school program.

Sen. Gore's measure—the Democratic rival of the President's plan—calls for continuation of federal aid on a greatly increased scale: $8 billion over five years with $2.5 billion going to the interstate system on a more generous matching basis of two federal dollars for each state dollar. The remaining $4.5 billion would be matched 50-50 as usual.

The hearings are disclosing a wide range of opinion as to how an increased highway building program should be organized and financed. The American Association of State Highway Officials strongly endorsed 100% federal responsibility for construction on the interstate system.

But AASHO also lent support to some parts of Sen. Gore's bill. In effect, AASHO suggested that the Republican and the Democratic highway programs should be combined.

AASHO proposed that the $1.6 billion a year federal funds written into the bill of Sen. Gore could be split to supply $1 billion a year of regular federal aid and still provide $600 million to support a bond issue for construction of the interstate system, as suggested in the President's program.

The American Municipal Assn. came out solidly for the President's program and called its Democratic rival inadequate. Ben West, Mayor of Nashville, Tenn., said Sen. Gore's plan did not place enough emphasis on the interstate system and "inevitably would require increased taxes at the federal level."

George C. Koss, president-elect of the Associated General Contractors of America, assured the subcommittee the construction industry could handle a vastly increased highway program.

He criticized the President's plan as putting too much emphasis on the interstate system. "You'll never get the job done by taking money away from one category of roads and putting it in others," he said. "You go downhill that way."

Keeth L. Seegmiller, executive secretary of the National Association of County Officials, supported the Gore

. . . Schools, roads

bill as "an immediate, practical step to advance highway improvement." He said the President's program offered too little aid for rural roads.

Farm and labor groups at the highway hearings presented views quite different from AASHO. The National Grange and the National Farmers Union favored the Gore bill for increased federal aid, but the American Farm Bureau Federation opposed any increase in federal expenditures and urged Congress to leave roadbuilding to the states.

The AFL had no informed opinion to offer on highway financing but leaned toward the Gore bill as a "substantial approach to the problem."

• **Schools**—In two weeks of Senate hearings on the Administration's school construction program, hardly a kind word was said for the plan. Right at the start, bond experts testified that the lending provisions of the legislation are workable. Witnesses almost unanimously condemned the White House program and favored straight federal aid along the lines of Sen. Lister Hill's bill, which would provide $1 billion of matching grants to the states in two years.

Educators and labor spokesmen denounced the plan as inadequate in scope and too complicated in its requirements. Republican senators suggested one change to make the bill more acceptable—remove the $200-million ceiling on direct federal grants to poor school districts, leaving this section open for Congress to appropriate as much as needed.

School legislation is likely to move more slowly in the House than in the Senate. Rep. Graham A. Barden of North Carolina told his House Labor and Education Committee last week that he wants to hold full-scale hearings on all school-aid bills.

Some of his committee members, including Republican Rep. Carroll D. Kearns of Pennsylvania, argue that enough information was developed last year. Rep. Kearns and other men on the committee have introduced aid bills that would authorize grants to the states without establishing any ceiling or limit.

No one can predict the outcome of school legislation at this session.

Combine Again Bids Low For Garrison Dam Job

The combine of Peter Kiewit Sons Co., Omaha, Neb., and Morrison-Knudsen Co., Boise, Ida., was again low at the second bid opening for the Garrison Dam Stage 2 spillway contract.

The combine bid $6.9 million for the job, the last major contract at the Army Engineer dam across the Missouri River, 75 mi upstream from Bismarck, N. D.

At the original bid opening last Nov. 5, the same combine bid $6.2 million. The next low bid was $8.5 million. But Kiewit-Morrison-Knudsen asked to be released from the bid. They said that because of an error it was $900,000 too low.

Army Engineers decided to reject all bids. Kiewit-Morrison-Knudsen again was low when the new bids were opened. Next low bid was $8.1 million. The government estimate was $7.7 million.

The contract calls for pouring 211,244 cu yd of concrete. The slab will measure 800 ft wide and 1,213 ft long. Retaining walls in the flat portion of the stilling basin will measure 84 ft high and those on the 20% slope portion will be 25 ft high. Also included in the construction are 15 relief wells 67 ft deep.

Western Electric Will Build Distant Radar Warning Net

Western Electric Co., manufacturing subsidiary of the Bell Telephone system, has been selected by the Air Force to construct the multi-million-dollar "distant early warning" (DEW) radar network across northern Canada —a joint U. S.-Canadian defense project.

The DEW line will run about 3,000 mi. Construction will be divided into three sections. Construction subcontractor for the western section will be Puget Sound Bridge & Dredging Co. and Johnson, Drake, and Piper, Inc., of Seattle, Wash. Northern Construction and J. W. Stewart Co., Ltd., Vancouver, B. C., will build the middle section. The eastern section will be built by Foundation Co. of Canada, Ltd.

Western Electric was also prime contractor for the Air Force's pilot DEW line project at Barter Island, Alaska.

The U. S. has responsibility for building the DEW line. It's likely that Canada will handle most of the line's operation. The Air Force will set up a "joint project office" in New York to handle administrative details on construction.

No official announcement yet has been made of the cost of building the DEW line, but unofficially its cost is estimated in Washington at about $200 million.

The mid-Canada radar warning line, to the south, is estimated to cost about $150 million.

Road Authorities

Alabama gets corporation for $50-million program; Kentucky law invalidated

The Alabama legislature has created a highway corporation with authority to issue up to $50 million in bonds, while in Kentucky a similar device for stepping up roadbuilding has failed.

Together with setting up a corporation to issue bonds, the Alabama legislature increased gas and diesel fuel taxes by one cent a gallon. It designated as members of the corporation the state's finance director, highway director, attorney general, treasurer and executive secretary to the governor. A $100-million program had been proposed by Gov. James E. Folsom and approved by the House but it was chopped down in the Senate.

The Kentucky Court of Appeals upheld a lower court decision declaring unconstitutional a 1954 act that authorized creation of a state highway authority, which was empowered to issue 40-year revenue bonds and lease roads it had modernized to the State Highway Department.

Key point in the decision voiding the Kentucky law was the fact that the leasing agreement necessitated committing the current revenues of the highway department beyond the legal period of a biennium.

The act, sponsored by the Kentucky Good Roads Federation as a means of speeding up highway modernization without resort to toll-road financing, called for this procedure:

The State Highway Department was to have conveyed legal title of designated highways to a 16-member highway authority to be appointed by the governor. Then, the authority was to issue revenue bonds with which to modernize the roads. Finally, the authority was to lease the completed roads back to the highway department at a yearly rental sufficient to retire the bonds within 40 years.

Registration Deadline Set For Large Dam Congress

Americans who wish to attend the meeting of the World Power Conference's International Commission on Large Dams in Paris from May 23 to June 12 must register by March 18.

Members of the U. S. Commission on Large Dams may attend as a right.

Registration forms, along with the registration fee ($35 for each delegate and $17.50 for each person accompanying him) should be sent to: J. W. Stanley, Secretary-Treasurer, U. S. Committee on Large Dams, P. O. Box AA, Boulder City, Nev.

ACI Annual Meeting Hears:

Seaway Will Bring $1 Billion of Construction

Milwaukee's municipal port director told the 51st annual convention of the American Concrete Institute in Milwaukee last week that construction of the St. Lawrence Seaway will stimulate about $1 billion of construction during the next five years.

H. C. Brockel, the featured speaker at the ACI annual dinner, said about $300 million will be spent for navigation improvements; $500 million for power development; $100 million for channel deepening; and $100 million for port and harbor improvements by Great Lakes cities.

He predicted this construction would create on-site work for 6,800 men and off-site work for at least an equal number.

Brockel said the overall program—including navigation and hydro-power development both by Canada and the United States but exclusive of channel dredging in connecting waterways—will involve these quantities: 5.4 million cu yd of concrete; 66,000 tons of reinforcing steel; 47,000 tons of structural steel; 35,000 tons of gates and hoists; 34 big hydro generators; 100 million cu yd of dredging; and 180 million tons of earth and rock excavation.

He said Milwaukee has spent over $10 million to date for construction of port facilities and declared that the city plans to spend an additional $5 million during the next five years on improved harbor facilities in order to take full advantage of the 27-ft channel depth planned for the Seaway.

The ACI meeting featured discussion of the latest developments in concrete construction. About two dozen formal papers were presented; there were an equal number of committee meetings; and nearly three dozen equipment and materials manufacturers presented exhibits. Attendance was close to the 1,000 mark.

• **Lightweight concrete**—Four speakers discussed advances in the design, production and placement of lightweight concrete. G. W. Washa, professor of mechanics at the University of Wisconsin, listed some of the characteristics of lightweight concrete.

It varies in weight, he said, from 20 lb per cu ft for light insulating concrete to 115 lb per cu ft for structural concrete. Its strength varies from very low values for insulating concrete to values for structural concrete that compare favorably with heavy concrete, weighting about 150 lb per cu ft.

The moduli of elasticity vary from 30,000 psi to 2,500,000 psi, and its absorption by volume ranges from 5% for good grade structural concrete to 50% for insulating concrete, he said.

CHARLES S. WHITNEY—new president of the American Concrete Institute.

R. W. Kluge, professor of civil engineering at the University of Florida, classified lightweight structural concrete as concrete weighing not more than 110 lb per cu ft and developing a compressive strength of at least 1,000 psi.

He pointed out that the design of lightweight concrete mixtures does not differ fundamentally from that of heavy concrete, but control of quality in the field may be a problem because of the peculiar absorptive properties of most lightweight aggregates. Deflection is a problem which must be reckoned with in the design, he said.

Kluge said there isn't much specific technical data available which can be useful in the design of lightweight concrete structural members. This applies especially to shearing resistance of the concrete, he said, and to bond strength between it and the reinforcement.

C. C. Carlson, Portland Cement Assn., pointed out that the concrete block industry probably is the largest user of lightweight mineral aggregates such as cinders, scoria, pumice, expanded shales, clay, slate, slag and sintered fly ash. He estimated that about 900 million lightweight blocks of 8x8x16-in. equivalents were produced last year.

He said the savings in dead weight was one of the reasons for the high demand for lightweight blocks. Other factors include improved thermal and sound insulation values, fire resistance and nailability.

Insulating concrete, where strength is not a principal consideration, is one of the most important types of lightweight concrete according to R. C. Valore, Jr., materials engineer of the National Bureau of Standards, who urged more research to develop uniform preparation and testing.

• **New officers**—Charles S. Whitney of Ammann and Whitney, New York consulting engineers, was elected the new ACI president to succeed Prof. Charles H. Scholer, head of the department of applied mechanics of Kansas State College.

Walter L. Price, head of the Bureau of Reclamation's Engineering Laboratories in Denver, Colo., was elected vice president. The other vice president is Frank Kerekes of the Michigan College of Mining and Technology, who was elected to a two-year term at the annual meeting last year (ENR Mar. 4, 1954, p. 23).

New directors include: H. C. Dalzell, Concrete Reinforcing Steel Institute, Chicago; Thomas B. Kennedy, Corps of Engineers Experiment Station, Vicksburg, Miss.; Walter J. McCoy, Lehigh Portland Cement Co., Coplay, Pa.; and Douglas McHenry, Portland Cement Assn., Chicago.

The Leonard C. Wason Medal for noteworthy research was awarded to Thomas B. Kennedy and Katharine Mather, chief of the Petrography Section of the Corps of Engineers Experiment Station in Vicksburg.

Rudolph C. Valore, Jr., materials engineer of the National Bureau of Standards, received the Wason Medal for the "most meritorious paper" of ACI proceedings, and the Henry C. Turner Medal was awarded posthumously to Roderick B. Young for notable achievements in concrete development work.

• **Meeting in Chicago**—Overlapping the ACI meeting by one day was the second Midwest Concrete Exposition sponsored by the Concrete Contractors Assn. of Greater Chicago.

At the Chicago meeting the accent was on exhibitions of machinery and materials used in the concrete building industry. About 5,500 persons looked over the 105 exhibits during the three-day meeting and a fair percentage of them benefited from technical sessions which featured papers on thin-shell concrete roofs and tilt-up construction.

Upper Colorado

Congress opens hearings on huge water project; outlook seems favorable

The $1-billion Upper Colorado storage project—one of the biggest reclamation and power projects ever recommended got its first hearing in the new Congress this week.

Assistant Secretary of Interior Fred G. Aandahl led off for the Eisenhower Administration with a complete backing of the big project. Aandahl underscored President Eisenhower's strong endorsement of the project—and noted that the Administration would ask for money to get construction going, if Congress authorizes the project this year. The President in his State of the Union message promised as much.

Other first-day witnesses—most of them from the Bureau of Reclamation—all backed up the engineering feasibility of the grand plan for the area.

The indications were clear that there would be no problem in getting the project authorized by the subcommittee on reclamation and irrigation of the Senate Interior Committee, which held this week's hearings under the chairmanship of Sen. Clinton Anderson, D., New Mexico.

Sen. Anderson and other subcommittee members—including Sens. Goldwater, R., Ariz., Watkins, R., Utah, Barrett, R., Wyo., O'Mahoney, D., Wyo.—took pains to get their favorable views on the record. They particularly tried to combat criticism from conservationist and similar groups who have charged that certain irreplaceable scenic wonders would be inundated if the dams are built as planned.

The only objector heard at the outset was Sen. Thos. H. Kuchel, R., Calif., who wanted assurance that California's rights to Colorado River water would be protected.

Wilbur A. Dexheimer, Commissioner of the Bureau of Reclamation, pointed out that many of the scenic spots which may be inundated have been visited rarely by the public and that the value of electricity and irrigation in the areas involved would more than offset the scenery covered by water. He stressed the need for electricity in the area since considerable uranium is being mined there at the present time.

It was Dexheimer's statement that 7.5-million acre-feet of water would be consigned to California each year that prompted Sen. Kuchel to ask if the Department of Interior planned to provide that amount of water to California, in priority over upper basin states, when less water than that is impounded in the watershed over a year's period.

E. O. Larson, regional reclamation director of Salt Lake City, presented to the subcommittee detailed statistics on each of the two storage reservoir projects—Glen Canyon and Echo Park—and the 11 participating projects which will use upper basin water for irrigation purposes.

He recommended early construction of the power plants, so they would be ready when initial filling of the reservoirs begins. "Through electrical interconnection between Glen Canyon, Echo Park and existing power plants in the lower basin, a first filling of the storage reservoirs could be attained with no interruption in delivery of firm electric energy to existing and potential customers on the river's system," he said.

U. S. and Canada to Avoid Parallel Seaway Facilities

The problem of U. S. and Canada building duplicate facilities along the St. Lawrence Seaway has now been ironed out by agreement between the two countries.

Under the agreement, the U. S. will build the $18-million Long Sault Canal with two locks near Massena, N. Y., which will carry ships around the power dams in the Cornwall-Barnhart area. Canada had been planning to build a similar bypass canal on its side of the river in the same area.

In exchange, the agreement calls for the Canadians to go ahead with a canal on their side of the river to bypass the power works in the Iroquois, Ontario area.

The U. S. St. Lawrence Seaway Development Corp. under legislation passed by Congress, also is obligated to build a bypass on our side of the river. But it has agreed now to ask Congress to change the law in this respect.

The Canadians let their first contract for the construction of the canal on their side in this area several weeks ago.

The deal ends the only threat of duplication of construction involved in the joint U. S.-Canada operation.

Air Force Academy Bids To Be Called in April

First bids for construction work at the Air Force Academy northwest of Colorado Springs will be advertised in April and contracts amounting to about $9 million are scheduled to be let by July.

Initial contracts will include site preparation, road work and utilities, according to an announcement by John P. Huebsch, deputy director of the Academy Construction Agency.

Oahe Contract to Prohibit Explosives for Tunnel Work

Army Engineers have made the use of a continuous mining machine obligatory in construction of the downstream half of the flood control tunnels at Oahe Dam, on the Missouri River near Pierre, S. D.

Specifications for the job prohibit the use of explosives in mining the tunnels. Since other methods—line drilling or peripheral sawing—of driving tunnels in soft rock would require the use of explosives, the restriction means that a continuous miner must be used.

Col. Thomas J. Hayes, 3rd, Omaha District Engineer, said the requirement was placed in the contract because blasting operations in the tricky Pierre shale at Oahe are hazardous.

He said, in addition, that the continuous mining machine operated by Mittry Constructors of Los Angeles in construction of the upstream flood control tunels has proved more economical in time and money. This machine, called the "Mittry Mole" can drive 2 ft of tunnel an hour (ENR Dec. 2, 1954, p. 24).

The contract—on which bids were invited March 1—calls for building six reinforced concrete tunnels, each 1,665 ft long and 22 ft in excavated diameter, complete with portals. Bids will be opened May 3. Completion is scheduled for November 1957.

The job will place under contract all phases of the outlet works except the control shafts. Bid invitations for that job are expected in April.

Report Backs Construction Of 30-Mi California Canal

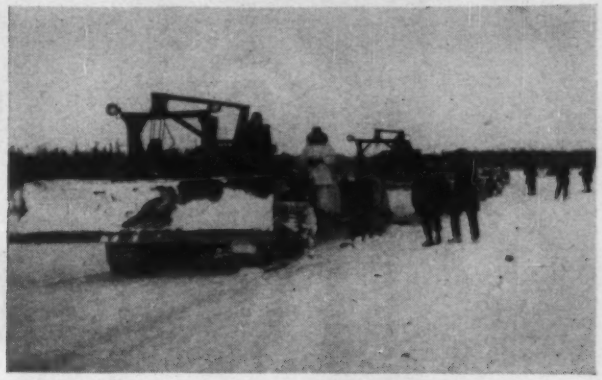
The California regional office of the Bureau of Reclamation has recommended construction of a $17.8-million canal to carry water 30 mi from the American River to farmland in Sacramento County.

Regional Director Clyde H. Spencer said in a report that the project would be feasible as part of California's Central Valley Project. His studies estimated the cost of distribution systems stemming from the canal at about $26 million.

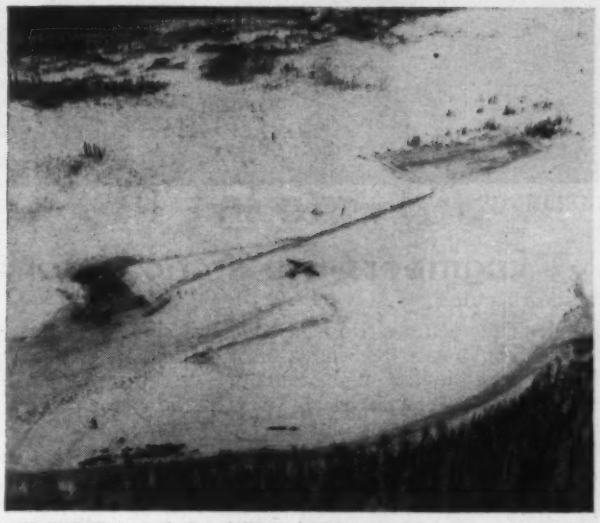
The report also recommended continued studies on the feasibility of extending the canal 33 mi to provide water for 300,000 acres in San Joaquin County. Cost of this extension was estimated tentatively at $24 million.

Intake for the canal would be at Ninbus Dam, afterbay for the 1,000,000 acre-ft Folsom Dam now under construction 7 mi upstream. Federal law provides that Folsom Dam be integrated into CVP when it is completed by the Corps of Engineers this year.

ENGINEERS parachute onto Alaskan snow field.



CONSTRUCTION begins within a few minutes.



AIRSTRIP is completed 72 hours later.

Snow-compacted airstrip will extend the range of U. S. air support in any war up north. It's . . .

One More Arctic Victory for Army Engineers

A company of 150 Army Engineers parachuted with construction equipment to the snow fields near Talkeetna, Alaska, under simulated combat conditions and completed a 5,000 ft snow-compacted landing strip in 72 hours.

The job was part of "Operation Snowbird" in which 2,500 paratroopers participated. An infantry battalion, in the role of "Aggressor" held the Anchorage area; the 503rd Airborne Regimental Combat Team was given the task of driving it out, beginning with an airhead at Talkeetna, 100 mi north of Anchorage.

While the infantry established a defense perimeter, the men of the 127th Airborne Engineer Company cranked up their equipment and set to work on the landing strip.

The key to the job was a Corps of Engineers invention called a heating tiller. It tears up several inches of the surface snow and throws it past the flames of eight blow torches. The partially melted snow then returns to the ground to be smoothed by a rear drag blade.

Behind the heating tiller, compaction equipment compresses the snow to the proper density as it refreezes. At Talkeetna, wobble-wheel pneumatic rollers and corrugated iron rollers were used for this purpose.

Working around the clock, the Engineers compacted some 40 in. of snow to approximately 24 in. Only 72 hours after construction started, a wheel-mounted C-47 weighing 30,000 lbs landed safely on the strip.

• **Arctic engineering**—The snow-compacted runway was the first to be built under simulated combat conditions, but the snow compaction technique has been under study by the Corps of Engineers for 10 years. It is part of a broad-scale effort by Army Engineers to solve the major engineering problems of military construction in the arctic.

Maj. Gen. S. D. Sturgis, Jr., Chief of Engineers, stressed the importance of this arctic research program. "The security of the U. S. and western civilization," he said, "may rest on the speed and efficiency with which this vital job has been—and is—being done."

On the basis of this research, Army Engineers now have developed a series of new techniques to enable them to build on snow, ice or ground that is either permanently or seasonally frozen and in weather characterized by extremely high winds, storms and fog.

Techniques for constructing structures on permanently frozen soil, or permafrost, were developed in building Ladd and Eielson Air Force Bases in Alaska and at Thule, in Greenland (ENR Oct. 2, 1952, p. 21).

Since thawing of the surface ground would wreck the buildings, the thermal balance of the soil had to be carefully maintained. To accomplish this, the Engineers devised "air-con-

BUILDINGS to house airmen on Greenland icecap sink slowly into the snow.

. . . Engineers win arctic victory

ditioned" foundations—through which cold air could pass freely—to insulate the soil from the heat of the building. Buildings also were placed on "pads" of materials that would not react to heat, such as certain types of crushed rock.

For seasonally frozen ground, another technique was developed. Structures built on hard frozen ground in the winter usually collapse during the summer when the surface soil thaws. Engineers found that one way to prevent this was to place piles to a depth below the thaw and put the butt end down—instead of the small end—so that the refreezing would not push the pile out of the ground.

In most cases the piles were not driven but were set in holes cut with high pressure steam.

• **On snow**—On the Greenland icecap, any structure will be slowly buried by the icecap movement and by blowing snow. No anchoring is possible. For this situation, the Engineers designed a building that would sink slowly below the surface.

They employed the submarine pressure-hull principle and built the buildings of metal culverts 18 ft in dia and of varying lengths. The tubes are hooked together at the ends and with inter-connecting passageways.

The overall structure is balanced to go down into the snow on an even keel at the rate of several feet a year. Personnel move in and out through submarine-like escape hatches.

Pipeline construction in the arctic presents similar problems. The comparative heat of the pipeline can thaw the permafrost so that it shifts and snaps the pipe. Engineers solved this problem by insulating the pipe carefully when it goes underground or by laying the pipe on special supports some distance above the ground.

Experiments are continuing to devise better ways of building roads on the snow of the icecap where there is no base of soil. Snow compaction can be used but blowing snow quickly covers the road. Other tests—with encouraging results—have been carried out by dumping soil onto the snow and compacting it.

Army Engineers also are experimenting with a portable gyrocompass for pathfinding where a standard compass is useless because of proximity to the magnetic pole. Radar-like techniques are under test for detecting snow-covered crevasses, and standard Engineer bridges are being tried at the crevasses.

Engineer Intelligence and the Engineers' Mapping Service have compiled a mass of data on rainfall, snow depth, beach conditions, soil conditions and materials for construction. Maps of some areas have been drawn up for the first time.

An important development in this work is the "geodimeter," an instrument that can accurately measure distances with light flashes in a fraction of the time that previously had been required.

Niagara Power

Corps of Engineers will hold hearings in Buffalo on plans for development

The Corps of Engineers has proposed alternative plans for development of 2.5 million kw of hydroelectric power on the Niagara River. It will air them at public hearings that are scheduled to be conducted March 24 and 25 in Buffalo.

The Corps plan calls for initial installation of 1,723,000 kw of dependable capacity, with provisions being made for ultimate development of 2.5 million kw.

To get this, the Engineers propose an intake in the Niagara River with either an unlined canal or a twin-tunnel headrace, a 1,512,000-kw power plant near Lewiston, a storage reservoir about a mile east of the powerhouse connected to the Lewiston power plant by either a canal or a twin-tunnel waterway and a 330,000-hp pumping-generating plant at the reservoir with a maximum generating capacity of 270,000-kw.

The Corps says its initial plan is economically justified. It estimates costs of alternative parts of the general plan as follows:

• Canal plan—First cost, $366,010,000. Annual carrying charges, public financing, $29,729,000; private financing, $46,449,000.

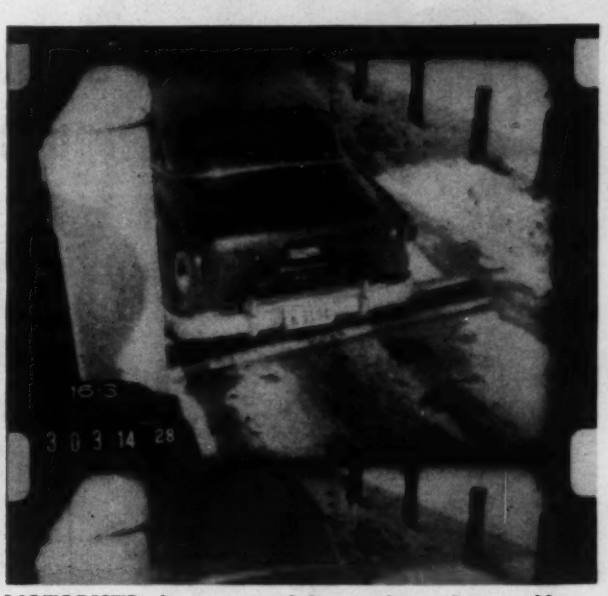
• Tunnel plan—First cost, $416,500,000. Annual carrying charges, public financing, $32,096,000; private financing, $52,790,000.

The Corps of Engineers originally favored canal construction over tunnels because of lower costs and indicated that federal development would be the best approach. It's now simply "laying forth engineering features," without recommendation. In drawing up these engineering data, Corps officials consulted with officials of the New York State Power Authority and other interested agencies.

Congressional units which will receive the Engineers' report later this session are sitting tight awaiting the outcome of the hearings. They have before them so far three bills, all of which call for private development of the American portion of the international power site by five New York power companies.

No public power bills have yet been introduced at this session of Congress. However, federal development is not lacking for support in this Democratic Congress, and it is expected that several pieces of legislation toward this end will appear when the Public Works Committees receive the final report from the Engineers.

MOTORISTS who stop to pay tolls get efficient service.



MOTORISTS who try to sneak by get photo taken, trouble.

Toll-O-Matic Takes Tolls—Toll Takers, Too

Toll takers are being taken. An automatic toll collection device now under test on New Jersey's Garden State Parkway may—if it works out—put a lot of toll takers out of work and substantially reduce the cost of operating toll highways.

Not only can reductions be made in the staff required at toll stations, but the facilities necessary for a large force of collectors can be eliminated. On a barrier-type toll plaza servicing 12 lanes of traffic, only four or five lanes—for surveillance, information and making change—need be attended. The other lanes can be manned by the robot collectors which require no shelter, heating, lunch hours or coffee breaks.

The automatic collecting device is called the Toll-O-Matic and is a product of Taller & Cooper, Inc., Brooklyn, N. Y. It consists of a cabinet with a large open-mouth receptacle located within easy reach of the driver's arm. When coins are tossed in, they are sorted through a churning hopper. If the proper combination of coins is deposited, the driver gets a green signal to drive on.

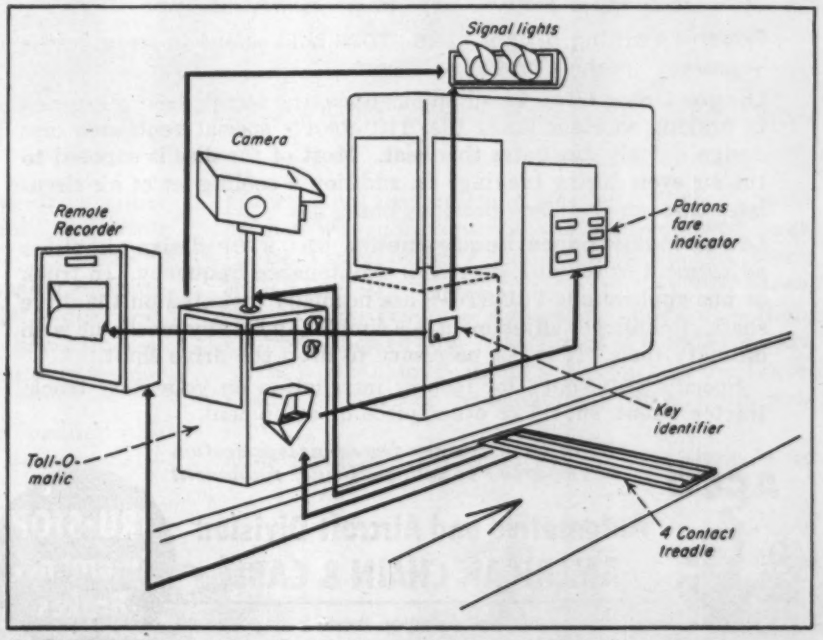
But if the machine counts the coins and comes out with the wrong total, a red light remains lit. And if the motorist ignores this red light and tries to sneak by, a treadle across the road sets off an alarm and a camera takes a picture of his rear license plate. At night, floodlights flash on so that the picture can be taken.

The camera itself is a unique item. A self-regulating shutter automatically adjusts to varying light conditions throughout the day. Work on the camera was begun two years ago in connection with installations for the New York State Thruway. On the Thruway, a similar camera is used to check permit stickers on cars entitled to unlimited travel for a flat yearly fee.

Not only does the Toll-O-Matic have a built-in collector; it has a built-in accountant as well. It registers every transaction on a remote recording and printing device with which it is electrically linked. A complete, printed journal tape of all cash receipts, total number of vehicles, time, date and location is available for auditing and statistical purposes.

On the parkway, approaching cars are advised that the automatic collector is in operation by a series of signs beginning about a half-mile from the toll station. Drivers with the correct change are directed to the mechanized lane and advised of possible penalties should they fail to deposit the proper fee.

Amber lights herald the slow-down approach and a red light marks the change receptacle. Failure to stop at the red light is a traffic violation and another count against any motorist who tries to cheat the mechanical toll taker.



COLLECTOR'S identifying key switches unit from manual to automatic.

an ACCO product

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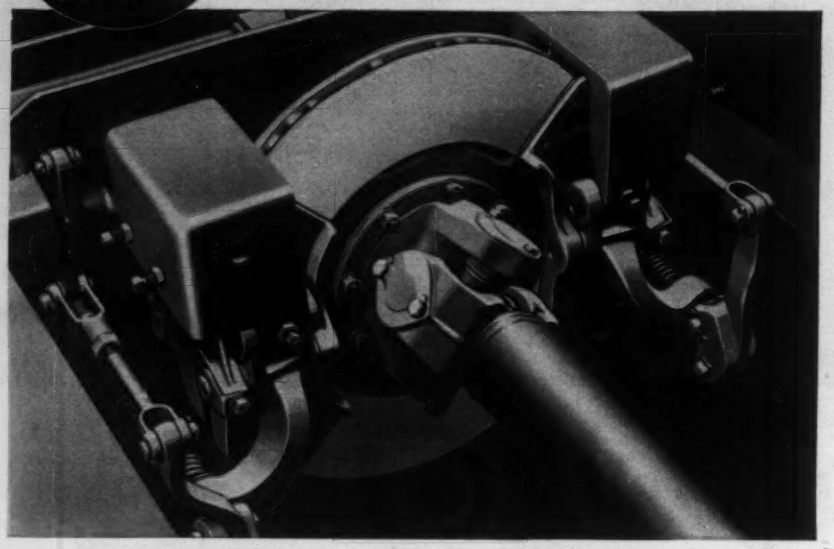

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CITY BY CITY

Port Proposal

Baltimore—An engineering survey of Baltimore's port prospects recommends improvements totaling $136.7 million and creation of an autonomous Maryland Port Authority.

As proposed by the New York City engineering firm of Knappen-Tippetts-Abbett-McCarthy, the Port Authority would be governed by nine commissioners. All Baltimore city functions and municipally owned piers would be transferred to the state body, and receipts from these facilities would go toward financing the new authority.

The recommended construction program is divided into three stages:

- The first phase ($7.1 million) would provide warehousing space, truck docks and improved roadways into the Lower Canton and Port Covington terminals.
- The second phase ($64.7 million) would include reconstruction of two piers at Locust Point and a marginal wharf at Port Covington; construction of two piers at the Lower Canton terminal and replacement of the Pratt Street piers with marginal wharves and transit sheds.
- The third phase ($64.9 million) calls for reconstruction of six piers at Locust Point, new marginal wharves and transit sheds in Lower Canton, and a second marginal wharf at Port Covington.

The report also suggests deeper and wider anchorages, deeper and wider channels into the port, more allowances to private pier owners for unloading and loading rail cargos, and inauguration of sea-train and direct sailing services.

Legislation covering the program will be introduced at this session of the Maryland General Assembly.

Charging for Sewer Service

Seattle—The City Council, seeking a way to finance a long-range $25-million sewage disposal program, is considering a new plan: Instituting sewer-service charges as separate items on water bills.

In recommending the plan to the council, Seattle's city engineer estimated that monthly fees ranging from $1 to $6.65 would raise a minimum of $2.6 million annually. Collection cost would run around $100,000.

The council now is considering a $3-million bond issue to finance urgently needed projects, including a new disposal plant, an addition to an-

(*Continued on page 27*)

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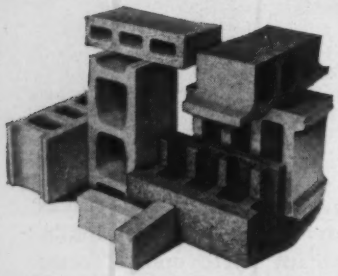

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other plant, and elimination of several outfalls into Puget Sound.

The long-range program would call for separation of sanitary and storm sewers, and a $5-million gravity flow tunnel from a sewage treatment plant in the Lake City district to Puget Sound.

$100-Million Market

Philadelphia—A $100-million market—the first of its kind in the U. S.—will be developed in south Philadelphia by a newly formed non-profit corporation known as the Food Distribution Center.

The market, to occupy a 45-acre tract east of Broad St. and south of Packer Ave., will serve as a wholesale food collection and dispersal center.

A group of 25 business, industrial and civil leaders serving on the corpotation's board of directors will supervise development and operation of the center. But eventually—after the market has been completely constructed and all financial obligations are met—the market will be taken over by the city.

Freeway Under Way

Providence, R. I.—Nearly eight years ago an $86.5-million north-south freeway project was recommended to speed traffic through Cranston, Providence and Pawtucket. Last week work started on the first freeway phase—a Providence River bridge that will cross a 500-ft span of water.

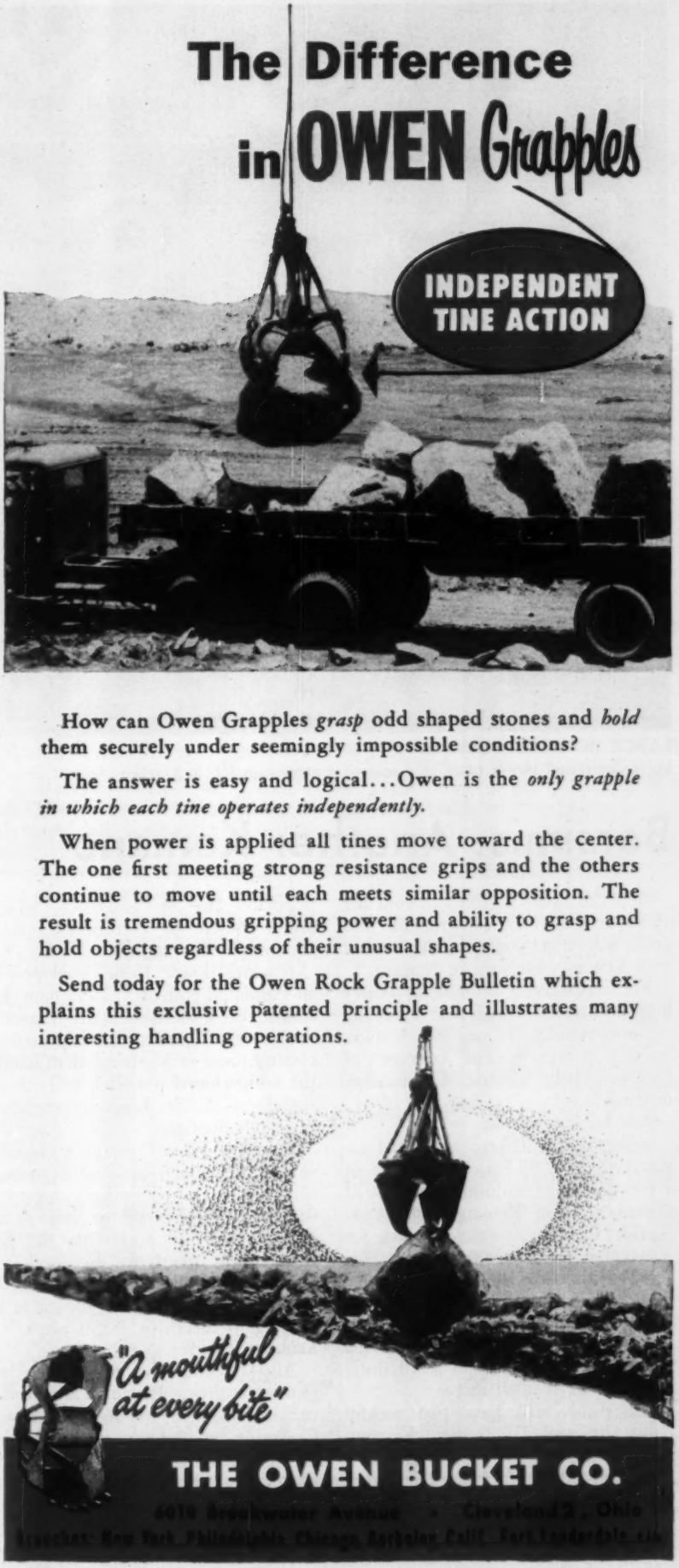
Initial work on the $2.2-million bridge project will be construction of five cofferdams to support the piers. The cofferdams, which will be built of pilings sunk 55 ft below the river bed, are expected to be completed by late summer or early fall.

TV View of Traffic

Detroit—The Streets and Traffic Department is studying the possibility of TV control of expressway traffic jams.

If the plan becomes a reality, TV cameras will be located so as to view long distances of expressway traffic. The cameras would be monitored at a central location, allowing an observer electrically to trigger warning signs posted on the highways. Motorists then could leave the expressway before becoming involved in a jam-up.

Two other systems of traffic control also have been suggested: use of a larger police force, or erection of observation posts manned by observers.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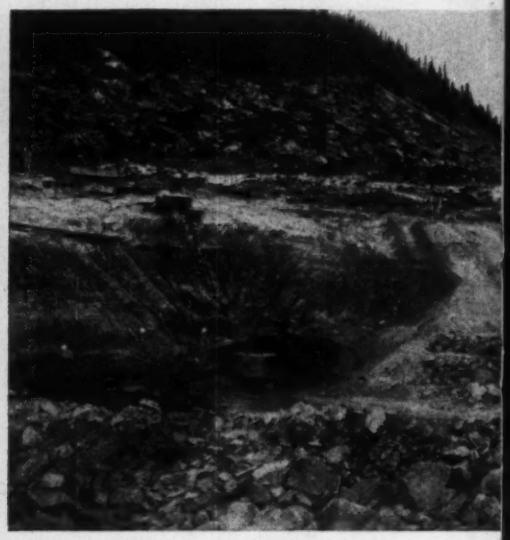
THE OWEN BUCKET CO.

LARGE BORE TUNNEL with 31½-ft finished diameter will deliver water to 1,200,000-hp underground power plant at a remote construction job in Quebec . . .



TWO ROCKFILL DAMS will create 875-ft head and form 290-sq mi lake which

Bersimis: Another Kemano

Add the name Bersimis to your list of big hydroelectric construction jobs under way—a list you may have headed with Kemano, McNary, or Niagara.

For Bersimis is a top-ranking project in every aspect, which has been developing rapidly, but without fanfare, as the prime present concern of Quebec Hydro-Electric Commission in Canada.

Just for comparison:

- Bersimis will have an initial capacity of 600,000 hp, an ultimate of 1,200,000 hp; Aluminum Company of Canada's great Kemano project in British Columbia was designed for 420,000 and 2,240,000 hp.
- Bersimis, like Kemano, will have a great underground powerhouse carved out of a mountain.
- Bersimis has a 7½-mile, 31-ft dia tunnel; Kemano's tunnel is 10 miles long and 22 ft in diameter.
- Bersimis will have two rockfill dams, 200 and 230 ft high; Kemano has a single rockfill 317 ft high.

Bersimis is number one on Hydro-Quebec's priority list as the stored-water project needed to balance its big (ultimately 2,200,000 hp) Beauharnois plant on the St. Lawrence, which might loosely be considered run-of-the-river by comparison.

Bersimis power, to be developed at an estimated cost of $225 million, including the cost of necessary transmission lines ($75 million), is expected to cost no more in Montreal than would the undeveloped potential in Lachine Rapids of the St. Lawrence, right at the city's doorstep.

(Lachine Rapids power eventually will be developed by Hydro-Quebec. But with Bersimis coming along with its first block of power to come in by December 1956, and with the big Beauharnois plant to be developed further to reach its ultimate 2,200,000-hp capacity, Hydro-Quebec is in no urgent need to begin work on Lachine Rapids.)

Also favoring the priority Hydro-Quebec is giving Bersimis: A contract with Shawinigan Water & Power Company for purchase of 400,000-hp to be delivered near Quebec City makes feasible construction of all 1,200,000 hp at once.

Part of the Bersimis power will go to Shawinigan; some will travel Canada's longest transmission distance, 450 miles to Montreal over a 300,000-volt line; and some will go south, across the St. Lawrence in four 69,000-volt submarine cables each 13½ miles long, to Gaspe Peninsula and a $400-million deposit of copper to be mined by Gaspe Copper Mines Ltd.

- **Region of great potential**—Total potential of the Bersimis River, including 550,000 hp available downstream from the present development, is 1,750,000 hp. And 40 miles east flows Manicouagan River, another untouched source of hydro-power.

It is small wonder, with these amounts of water power awaiting development in a wilderness also abounding in mineral and timber resources, that the Province of Quebec has dreams of vast future industrial development and expansion.

- **Timetable for a fast job**—History of the project is brief; work has progressed fast. Surveys began in 1952 and finished in December, 1953. At the same time, an Anglo-Canadian Pulp Company road from Forestville to the construction sites was reconstructed and improved, while 35 miles of main roads and 22 miles of secondary roads were built through the wilderness.

Construction of camps, offices, shops, stores, and cafeterias with all the necessary utilities was carried out at Lac Cassé, at tunnel sites 1 and 2, and at Labrieville.

Through Forestville came dismantled parts of two 7,500-hp generators, from an abandoned location near Beauharnois, to be handled on sleds and installed as temporary power on the Bersimis near Lac Cassé.

At Forestville on the St. Lawrence

will back water into adjacent Saguenay River Basin to benefit hydro works there.

PORT AND AIRPORT are at Forestville on the St. Lawrence. Bersimis project is 85 miles into the bush from here, yet at Labrieville a bustling town of 3,000 has grown.

a new wharf was built last year to handle the heavy traffic of materials.

• **Twin dams, big tunnel**—The two dams at the foot of Lac Cassé will raise the lake level 155 ft. They will be rockfills, one 2,210 ft long across the Bersimis and the other 1,035 ft across the Desroches. Between the two, surplus water will spill over a spillway 1,000 ft long, carved out of the mountain between the two dams.

A diversion chanel, a diversion tunnel (1,100 ft long and 35 ft in diameter) and a concrete culvert were built to dry up the damsites.

The main tunnel, 7½ miles long, has three adits. At No. 1 the contractor is Cartier Construction, at No. 2 it is Atlas Construction and at No. 3 Perini-Quebec. Finished diameter of the tunnel will be 31½ ft and Dufresne Construction have already started supplying the other contractors with concrete for tunnel lining.

Beside the tunnel itself and the adits there will be one surge tank 84 ft in diameter.

Then there will be the underground powerhouse (565 x 65 x 80 ft high) to house eight 150,000-hp units working under 875 ft of head.

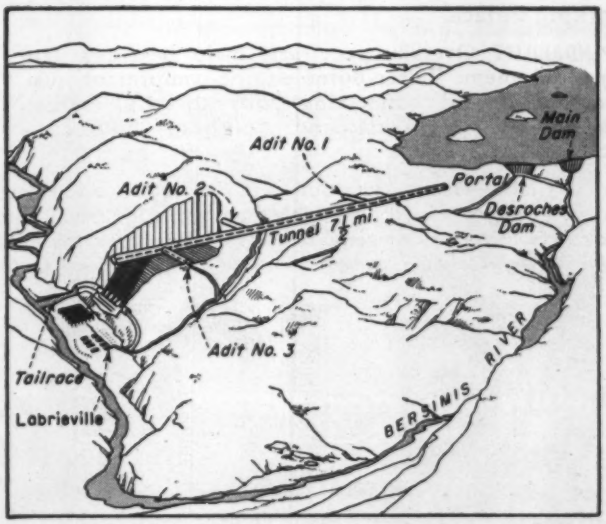
• **Construction equipment pooled**—Hydro-Quebec has purchased and maintained all equipment for this project, thus relieving its contractors of that problem. Contractors merely requisition what they need from an equipment pool. Nothing stands idle long. Hydro-Quebec expects to use this big inventory of equipment even beyond Bersimis and sees long-term economic advantage in doing so.

Besides the tunnel contractors already mentioned, Angus Robertson Ltd. is building the dams; Komo Construction did buildings at Labrieville and the wharf at Forestville.

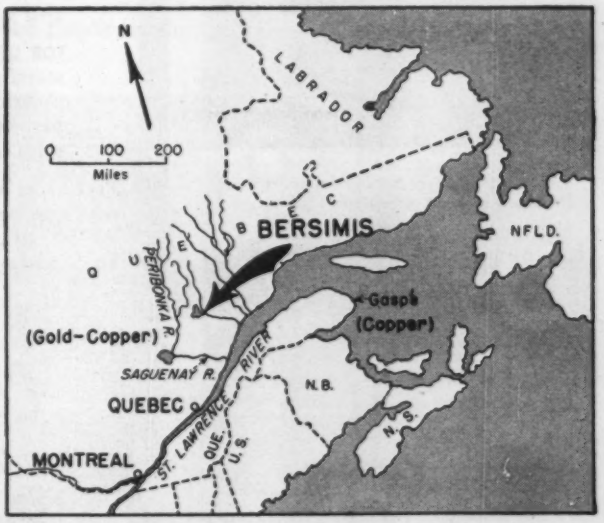
Anglo-Canadian Pulp and Paper Mills Ltd. contracted to build roads, supply lumber and haul materials and equipment to jobsites.

H. G. Acres of Niagara Falls, Ont., are consulting engineers to Hydro-Quebec. As such, the firm planned and designed this hydro project. E. Fiset is town planning architect; G. Piette is consultant on municipal services.

For the Quebec Hydro-Electric Commission, F. Rousseau is chief engineer of the power development division.



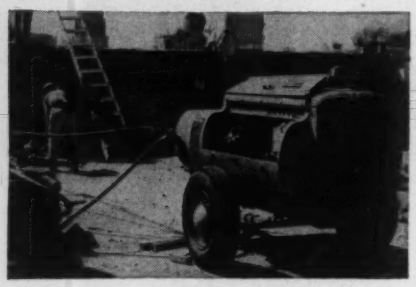
THE SCHEME is tunnel-diversion to a downstream powerhouse. It involves 2,000,000 cu yd of excavation, all elements included.



THE SITE is remote but power will feed to Quebec cities and mineral-rich areas on which the province is pegging its future.

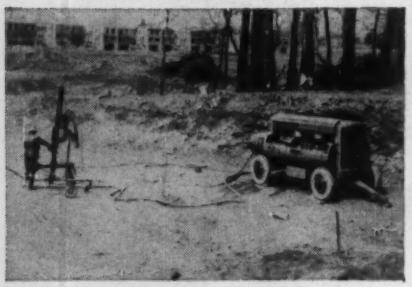
Two "600" portables at work on a mountain road job.

Three "600" compressors used on the New York Thruway.

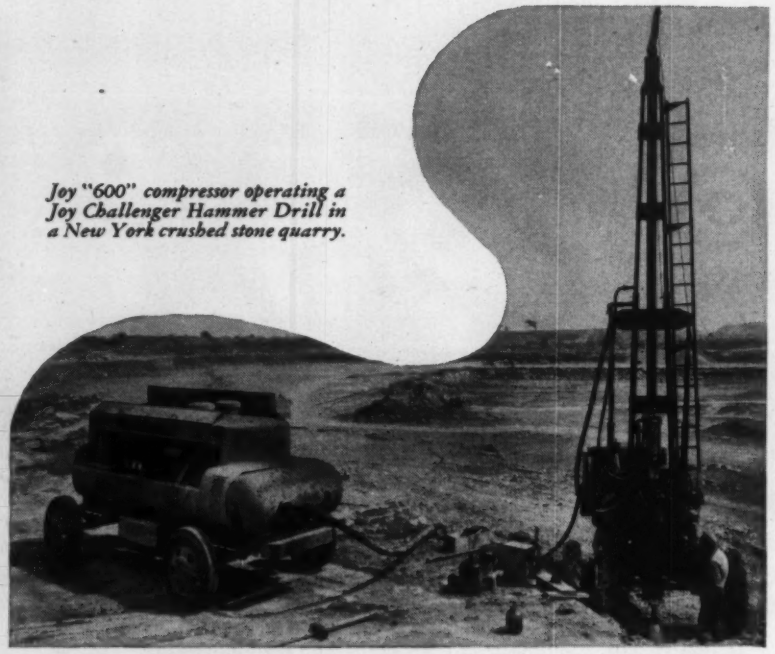


A "125" operating on roof of a Dallas skyscraper.

This "315" powers paving breakers on a Pittsburgh construction job.



A "600" with Joy Wagon Drills on a Philadelphia housing project.



Joy "600" compressor operating a Joy Challenger Hammer Drill in a New York crushed stone quarry.

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You'll find Joy Portable Compressors on a variety of jobs, in all parts of the world. Check the owners . . . you'll get reports of consistently fine performance and complete dependability from the tried and true design.

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FOR DEPENDABILITY Oversize receivers, main bearings and starting equipment. Three-point engine-compressor suspension, rifle-drilled connecting rods and lightweight pistons. Welded steel frames and "bulkhead" body construction.

Five sizes are available—from 75 to 600 cfm. For details on how you, too, can benefit from Joy's field-proved design, write for free bulletin #A-55, to **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario*

Consult a Joy Engineer

JOY

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CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

Golden Gate Bridge Tightens Its Grip

All cable band bolts get impact wrench treatment in maintenance operation

An unusual maintenance procedure—the tigthening of some 3,700 cable-bands bolts—has just been completed on the Golden Gate Bridge at a cost of $69,000. Although tension in the big bolts—most of them 2⅜ in. dia and nearly 2½ ft long—is checked at periodic intervals (every 5 years or so) this is the first time since the bridge was completed 17 years ago that all of them have been tightened. And it is the first time that impact wrenches have been used for such work.

The most recent check on cable band bolt tension was made by spot checking a number of them after addition of the new bottom lateral bracing system (ENR June 24, 1954, p. 46). It was found that tension of a substantial number of the bolts had been reduced to 50,000 lb (in comparison with the design tension of 100,000 lb). Accordingly, the decision was made to tighten all cable band bolts.

Reduction in tension can be contributed to gradual decrease in diameter of the cables due to normal movement. And it can also be attributed in part to the increased 5,000 ton loading of the bottom lateral system.

The scale of measurements involved is quite small. A reduction in the bolt strain from .02 to .01 in. means that the bolt tension has reduced from 100,000 to 50,000 lb.

The spot checks are made by measuring the length of the bolt with a micrometer then slacking off all tension and remeasuring the bolt length. The ends of the bolts were originally drilled to receive micrometer points and facilitate such measurement.

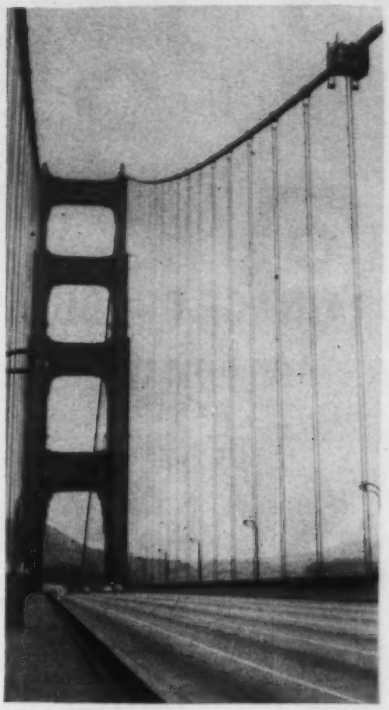
• **Scaffold design**—Low bidder for the bolt tightening work was J. H. Pomeroy & Co., Inc., of San Francisco. First problem facing the contractor was to design suitable scaffolds. The resulting rigs ride the main cables on rubber-tired wheels. Platforms are independently adjustable at each end to permit level working areas at proper height regardless of the slope of the cable. Shields are provided to protect suspender ropes from abrasion. Safety nets protect workmen from falling. And ¼-in. hardwear cloth protects bridge users from falling debris.

The 20-in. dia rubber tired wheels work against 4-in. solid shafts that support the 3x10-ft platforms on each side of the cable. Two winches are involved, one for moving the scaffold and the other as a safety control.

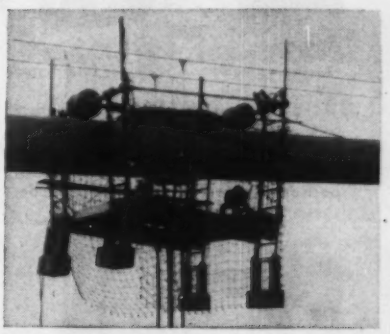
Work started simultaneously on each of the two cables with a crew working from each of the towers on the main span—making four crews in all. After main span bolts were tightened, simultaneous work proceeded on the side span sections of the cables.

• **Bolt tightening**—In brief, the operation involved loosening a bolt, determining by micrometer measurement its free length, and tightening it to the required tension as determined by elongation measurement. Before any nuts were loosened, all paint on the threaded ends was carefully scaled off to prevent fouling. Paint was also scaled from the area around the head of the bolts where they contact the band.

Work progressed up from the lowest bolt on a cable band on the top side alternating between top and bottom bolts. Number of bolts vary from 6 in. the bands at the middle of the



HIGH ON THE MAIN SPAN of Golden Gate Bridge, one of the specially designed traveling scaffolds moves along the cable during the bolt-tightening operation.



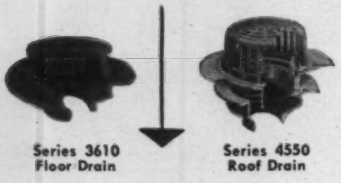
SPECIAL SCAFFOLDS ride the cable.

WORKING ON MOVABLE SCAFFOLDS, laborers use impact wrenches to tighten the bolts (left) and a micrometer (right) to measure strain. Tension is computed from bolt elongation.

2 ways to select

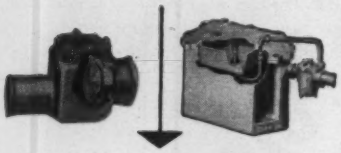
DRAINAGE PRODUCTS

for any type of project



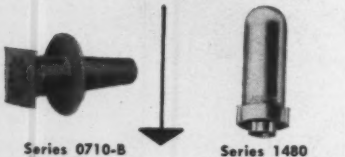
Series 3610 Floor Drain — Series 4550 Roof Drain

● Engineers who have the job of selecting the drains for any project . . . or who are engaged in writing plumbing drainage specifications for any building can approach this work in one of two ways.



Series 1170-T Backwater Valve — Series JH Grease Interceptor

❶ The hard way is to spend the necessary time and effort in locating the right type of information . . . analyzing pages of data . . . making comparisons—before a selection is made.



Series 0710-B Pool Fitting — Series 1480 Shock Absorber

❷ The easy way is to call on Josam, knowing that Josam has the widest range of plumbing drainage products in the world . . . and can give you the answers you want in a moment. Since there are so many important jobs to do—why take valuable time selecting drains. Call Josam on every job. Send coupon below—and get acquainted with the Josam line. No obligations.

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center span to 20 per band at the top of the side spans. Most frequent number of bolts per band is 18.

Three separate passes were made on the bolts in each band to adjust for interaction between bolts. An elongation of 0.001 in. is equivalent to a stress of 5,000 lb in the 2⅜ in. dia steel, heat-treated, turned bolts. Total elongation of 0.02 means a bolt loading of 100,000 lb or 22,500 psi. Tolerances permitted in the tightening was plus or minus 10,000 lb.

Strain is measured by special micrometers. Each micrometer is adjusted to read "zero" on a standard bar that accompanies it. Regular checking on the standard bar will disclose any irregularities in the instrument.

At each bolt measurement is first made and recorded in the no load condition and then again after each tightening. Generally, at the end of the third pass all bolts were found to be within required range of tightening.

The work is under the direction of Clifford E. Paine, consulting engineer for the Golden Gate Bridge & Highway District.

For J. H. Pomeroy & Co., Inc., J. R. MacDonald was general superintendent and C. C. Swensen was project engineer.

Water in West OK for This Season . . .

Normal winter streamflows in the Pacific Northwest power pool area can assure all firm and interruptible energy loads to be carried through the winter by hydro-generation, according to Bonneville Power Administration. Reservoir resources from the favorable water year of 1954 also mean that even under the most adverse flow conditions in the Columbia basin, BPA could carry all of its loads, including the interruptible aluminum plants, without use of steam for the present.

But as the agency looked favorably upon the remaining months of the 1954-55 storage drawdown season, snow survey reports from throughout the Columbia basin dimmed the outlook for 1955-56 unless rain and snow for the winter are above average.

Below average rain and light snowfall has prevailed generally in the basin drainage area.

Columbia runoff at The Dalles, Ore., is forecast at 79% of the 10 year average on the basis of Jan. 1 data, for Trinidad, Wash., 84% of average. The Snake River runoff at Clarkston, Wash., is forecast at 66% of average, reflecting the serious shortages in the courses of this major Columbia tributary. Water prospects for the Snake and its headwater tributaries are consistently lower than for the lower Columbia. A serious consideration is the extremely dry watershed soils which will require substantial snow-melt to "prime" them before the spring runoff begins. Basin snow courses varied from 40% to 95% of average for this time of year, according to Morland W. Nelson, leader of the Soil Conservation Service studies, made in co-operation with Anthony J. Polos, Weather Bureau hydrologist, and W. T. Frost, Oregon SCS survey leader. Reservoir storage for the northern streams—Washington, northern and central Idaho, Montana—is excellent, but reservoirs of southern Idaho and Oregon tributaries—particularly the Oregon area east of the Cascades—are reported the lowest of experience.

Generally, the basin receives 40% of the total winter's snow by Jan. 1 but this year only 30% has fallen.

Water content of snow in Oregon mountain cover is only 78% of the average on 35 measured snow courses for which records have been kept for 10 years or longer.

. . . But a Low Lake Mead Bodes Ill for Some Areas

Major conservation reservoirs serving areas in California had in storage Feb. 1 about 45% of their total capacity. This amount is approximately 5,070,000 acre ft less than that of one year ago.

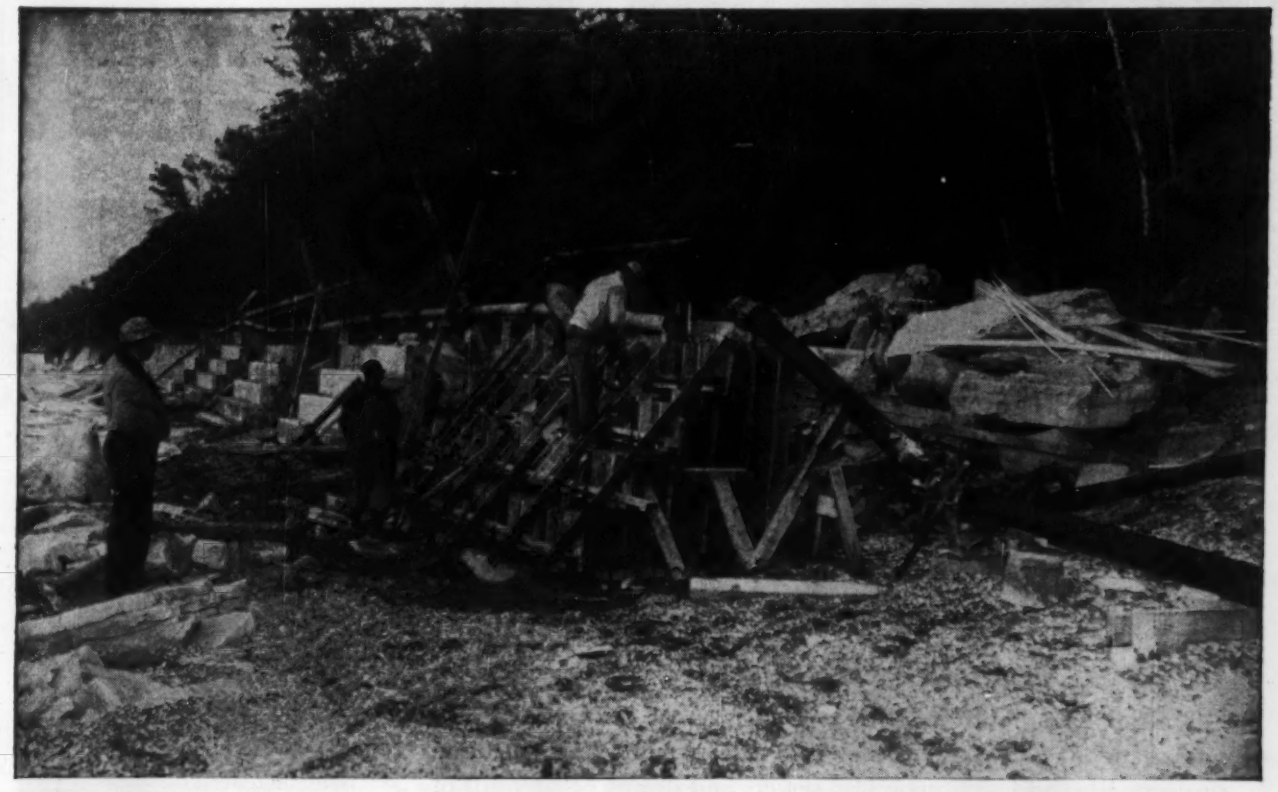
The major portion of this decrease in storage was at Lake Mead on the Colorado River where the storage on Feb. 1 was at the lowest stage since 1941. Power generation at Hoover Dam forming Lake Mead has been reduced because of the low storage level.

Water in storage in intrastate reservoirs is about 74% of the 10 year mean and 558,000 acre ft less than one year ago.

However, with normal precipitation during the remainder of the season, most reservoirs utilized for conservation on streams tributary to the great Central Valley area may be expected to fill during the snow melt period.

This information is contained in the first water conditions report for 1955 by California State Engineer A. D. Edmonston.

While recognizing conditions generally are satisfactory and in accordance with average expectancy for Feb. 1, the report noted that precipitation in excess of average will be required to provide normal water supply conditions during the remainder of the water year in the Lahontan area supplying Southern California points.



Laborers puddle and vibrate concrete with plenty of time to handle the pipe. Note pipeline lying above form for direct delivery of concrete and minimum pipe handling.

Pumpcrete was located 300 feet from work area, most convenient to truck mixer delivery.

Pipeline laying was simple through dense foliage on 30-degree slope.

PUMPCRETE® Saves 20% over original estimate on Lake Michigan retaining wall

Milwaukee contractor, Robert C. Tubesing saved 20% of original estimate on 500-foot retaining wall at the foot of Lake Michigan bluff, with rented Pumpcrete.

The 160 Single Pumpcrete was located just off the street convenient to truck mixers at the top of the bluff...300 feet from the work area. Trucks were able to get in and out easily, deliver their loads fast and keep work on schedule.

Contractor Tubesing reported laying the pipeline down the 30-degree wooded slope was simple and inexpensive compared to access roads or chuting system. He also stated the unsegregated 2-inch to 3-inch slump delivered by Pumpcrete was far better than could have been expected by chutes.

Concrete placing on this job could only be done when offshore winds freed the work area of water. Concrete was placed in the 15- to 30-foot forms at the rate of 12-18 cubic yards per hour with a minimum crew—operator, working foreman and two laborers.

Why not consider the fast, cost-cutting possibilities of Pumpcrete for your next job? See your local Rex Distributor or write: Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CONSTRUCTION REX® MACHINERY

CHAIN BELT COMPANY

CLAY PIPE PLAYS BIG ROLE IN TRAFFIC ARTERY MODERNIZATION

Today's traffic problems are forcing cities everywhere to rearrange established neighborhoods for construction of new roads, new interchanges, new underpasses. On these vital modernization projects, time and again you find sewers and drains being built of Vitrified Clay Pipe.

The cost of urban modernization runs so high that municipal officials can't afford to take chances on substitute materials. No other material can equal Clay Pipe for corrosion-proof dependability. No other material can match Clay Pipe for never-wear-out permanence. For municipal modernization projects that will benefit the community for generations to come, always specify Vitrified Clay Pipe. *It's guaranteed for a half a century.*

Over 10,500 ft. of Vitrified Clay Pipe in sizes ranging from 8" to 24" is being installed at Worcester, Massachusetts, where a new tunnel is being built to speed the flow of highway traffic through Lincoln Square. The project is under the direction of Resident Engineer Ralph Romano, for the State Department of Public Works. Private contractors include Farina Bros. Co., Superintendent Murray Dash; and Charles Capone Construction Co., Superintendent David Capone.

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Even in the large trunk-line sizes, there is a **complete** line of Clay Pipe Fittings to help you solve every installation problem. This cut elbow, for example, makes accurate 90° turns possible without using substitute materials or improvised connections.

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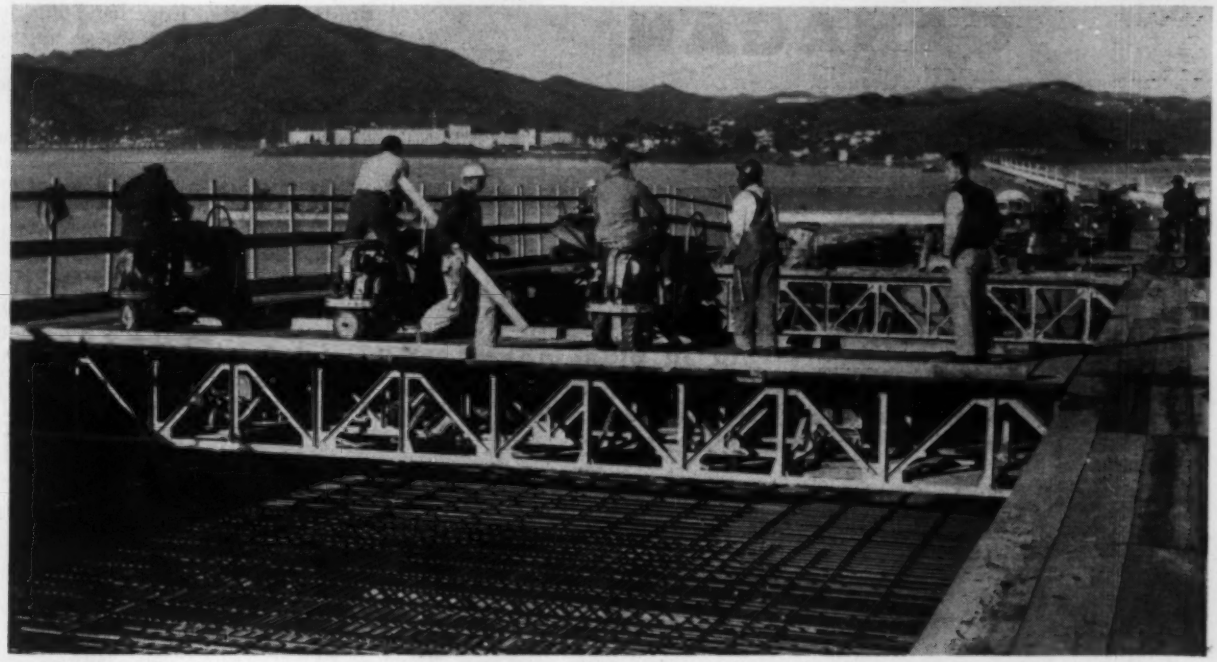


TOWER BUGGIES maintain one-way traffic on runs flanking 36-ft-wide roadway, dumping concrete from traveling bridges.

Big Finishers Speed Bridge Deck Paving

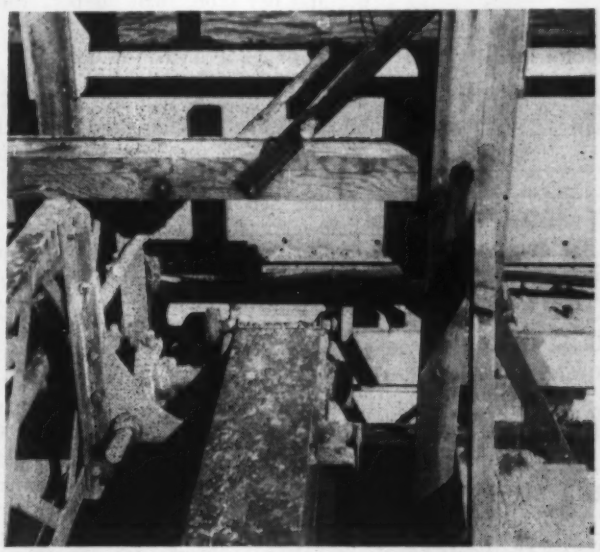
Three pavement finishing machines of the largest size—36-ft span—work in tandem to place the lightweight deck on Richmond-San Rafael Bridge (ENR Nov. 4, p. 33). Two of them place successive courses of concrete and the third brooms and applies curing compound to the surface. Aside from the machines' span, mechanical brooming is the principal novelty on the job. Development models have been used on a few projects, but the device has only recently gone into standard production.

Working with the finishing equipment is a fleet of power buggies that ride runways flanking the pavement at the level of rolling cross bridges, one of which is pushed ahead of each mechanical screed. Concrete is dumped from these bridges, which, by connecting the two runways, make one-way buggy traffic possible. Normal progress is 100 to 200 ft per day.

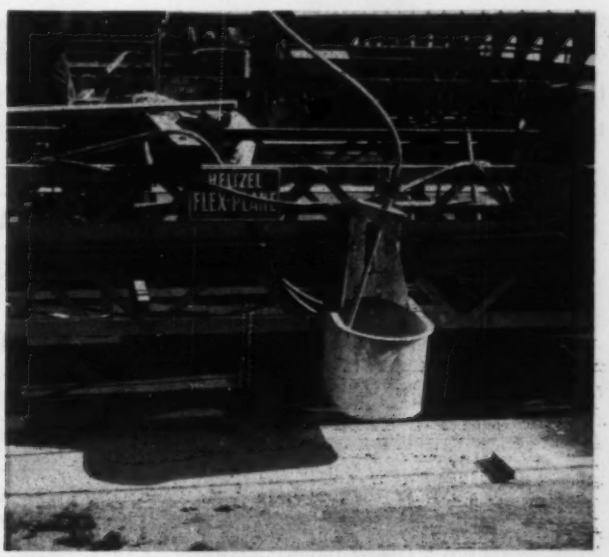
The first finishing machine places lightweight concrete to a depth of 10 in. or 5½ in.; the second adds a half-inch thick rich mortar wearing surface. The thicker deck is on steel girder sections of the bridge and the 6-in. slab is on truss sections, where supporting members are closer together.

Concrete is brought to the job in truck mixers that are parked on an incline to facilitate dumping of the stiff lightweight concrete. Planks are laid on the existing portion of the bridge deck to protect it during concreting.

After power buggies dump their concrete the first two machines spread and smooth the concrete. Concrete workers apply a float finish, and hand-



POWER BROOMING for roadway surface is accomplished with belt-mounted brushes on a finishing-machine chassis.



OTHER SIDE of brooming chassis carries curing compound distributor back and forth. Application is uniform, windproof.

GAHAGAN ANNOUNCES

some recent and current users of its

GEOPHYSICAL SURVEYS

A new, surer, faster and cheaper way to explore sub-surface strata in planning sites for highways, dams, power plants, big buildings, bridges, airfields, tunnels, reservoirs, water supplies

LOCATION	CLIENT
Shelton Well Field	Bridgeport Hydraulic Company
The Connecticut Expressway	Ammann & Whitney, Engineers
Casco Bay Power Project	Central Maine Power Company
Delaware River Power Project	Jackson & Moreland Co., Engineers
Southeast Expressway, Mass.	Massachusetts Dept. of Public Works
Narrows Bridge Site, Brooklyn & Staten Island, N. Y.	Ammann & Whitney, Engineers
125th Street Bridge Site, N. Y. C.	Ammann & Whitney, Engineers
Narragansett Bay	New England Power Service Company
Baker River (Wash.) Hydraulic Development	Stone & Webster, Engineers
St. Lawrence Power Project	Sanderson & Porter, Engineers
Massachusetts Turnpike	Howard, Needles, Tammen & Bergendoff, Engineers
Garden State Parkway	Goodkind & O'Dea, Engineers
The Connecticut Expressway	Loomis & Sullivan, Engineers
The Connecticut Expressway	Knappen—Tippets—Abbett—McCarthy, Engineers

A Gahagan Geophysical Survey, utilizing special portable seismic-wave measurement equipment, gives an accurate and continuous picture of hardpan and bedrock stratas and the depths at which these will be found —and usually the varying characteristics of the overburden on land, whether sand, gravel or clay. Surveys can also be made under water to determine bedrock. Accuracies are remarkable. Savings in time and money over test borings are enormous. Gahagan Geophysical Surveys were developed out of Gahagan's own subsurface problems as a leader in the hydraulic dredging field for over fifty years. If you have a sub-surface exploration problem, write, wire or telephone at once to Ken Sandbach, Vice Pres., Geophysical Survey Division, Gahagan Construction Corporation, 90 Broad St., New York 4, N. Y. Telephone: Whitehall 3-2558.

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Repairing Docks, Dams & Bridges
Reservoirs
Insulating Concretes
Water Main Lining
Thin Walls
Sewer Repairs
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With Screwed On Flanges
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Pipe centrifugally cast in accordance with Federal Specifications WW-P-421 or ASA Specifications #A21.6. Cast iron bell & spigot or flanged fittings and valves in stock

WATER WORKS SUPPLY COMPANY
State Highway #23
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finish the edges. Edge hand-finishing is necessary because there is not enough room for the machines to operate over the top of forms as they might on highway paving.

The third machine has two broom heads mounted on an endless belt that moves across the roadway at the machine's leading side. This gives the necessary surface texture while the machine is moving slowly along.

On the rear of this same machine are mounted two spray nozzles that automatically apply the compound used for curing. The nozzles are shielded to protect the spray from the wind.

Lightweight concrete must meet a 103-pcf maximum. And 28-day strength is set at 3,000 psi. Specifications call for 6½-sack mix and a 2- to 4-in. slump. This means that the water-cement ratio must be kept low to meet the strength requirement. Result is a water-cement ratio of 0.58 to 0.60 by volume.

The stiff mix means extra effort in moving the mix from the truck mixers to the motorized buggies. And it means that two or three passes by the finishing machine must be made to assure even distribution of the mix. An air entraining admixture is used mostly for durability, but it also helps workability.

Topping the lightweight concrete is a ½-in. thickness of a rich mortar wearing surface. This is a 1:3 mix by weight of cement and natural sand with the mortar running between 9 and 10 sacks per cubic yard. It also must meet a 3,000 psi, 28-day strength. Average water-cement ratio for the mortar is 0.69 by volume.

Requirements on the lightweight aggregate is that the coarse aggregate (1-in. max.) must be not less than 35 pcf and not more than 50 pcf. Fine aggregate (up to ¼ in.) must be between 40 pcf and 60 pcf.

Two different aggregates are used with selection depending on availability. When working from the Richmond end of the bridge, a natural aggregate—Basalite—goes in the mix. On the San Rafael end an expanded shale aggregate—Haydite—is used. Haydite has angular grain particles and results in a stiffer, harder-to-move mix than Basalite which has a more rounded nature.

The Richmond-San Rafael Bridge is a project of the Division of bay toll crossings of the California Department of Public Works, Norman C. Raab, projects engineer. Ben Balala is resident engineer. Bridge paving subcontractor is Hilp, Rhodes and Larkin, a joint venture. Superstructure prime contractor is a joint venture of Judson Pacific-Murphy Corp. and Peter Kiewit Sons Co.

Manitowoc...

MASTER over miles of hardpan

2 Manitowoc One-Yard Hoes lick tough hardpan on refinery job for BECHTEL CORP. at Anacortes, Washington

When the going got rough and other units scratched, picked and hacked to the tune of lost time and low production — it was time to bring in the Manitowocs!

The two "1600" hoes waded in and the hardpan took a pasting. Mile after mile, these "work horses" dug in — 25 ft. deep at times — and came up with full dippers of pay dirt every time.

The trench had to be 9 ft. wide in many spots and Manitowoc's boom strength and stability enabled it to trim trench edges clean and neat without traveling. This superior feature — plus Manitowoc's 37′ reach resulted in no lost motion and more miles of trench per shift.

Need a big-producing hoe? Get the facts on the Manitowoc 1600. Manitowoc Engineering Corp., Manitowoc, Wis.

MANITOWOC

SHOVELS 1-5 YD. Speedcrane CRANES 20-100 TON

Six **LIMAS** team-up to tame the sea at Lake Maracaibo

Campenon Bernard is using a team of six top performing Limas to build a 1½ mile breakwater across the mouth of Lake Maracaibo in Venezuela. Four Type 803's and one Type 2400 high-lift shovel load rock on the island of Toas. The rock is then shipped by barge to the island of Zapata where another Lima 2400 unloads it and deposits it in the sea to form the breakwater.

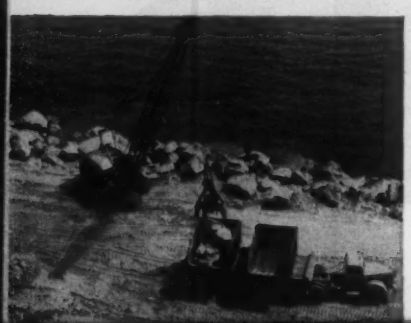
On this and hundreds of other jobs around the world, Limas are proving that they can travel and work anywhere . . . and do every job better because of the built-in "extras" that Lima provides. You can depend on LIMA for low maintenance and less down-time.

COMPARE QUALITY! No other machine gives you as much as LIMA!

1. Piston ring type dirt seal and retainers in crawler rollers.
2. Rollers, gears and shafts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings are used at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
7. Torque converter (optional).
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

LIMA Type 803 loading rock on island of Toas.



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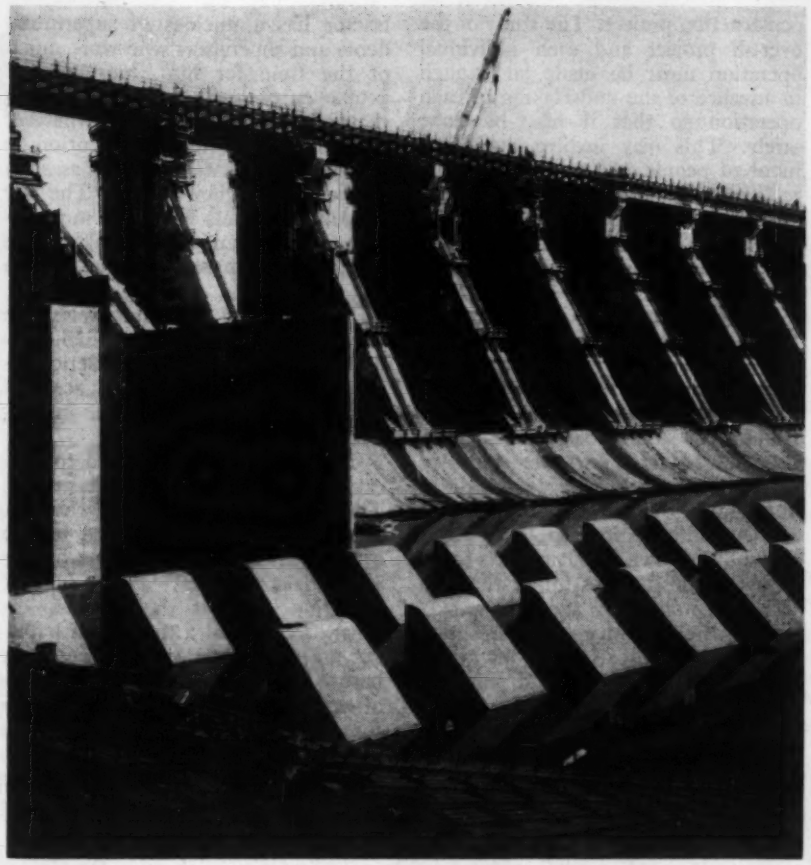


EACH CONSTRUCTION JOB presents new problems in providing safety for the workmen. This is the spillway section of McNary Dam during construction.

Accident Prevention on Construction Can Cut Insurance Costs Materially

H. E. Beaven
Manager, Home Office Division
Engineering Department
American Mutual Liability Insurance Co.
Boston, Mass.

Too few construction contractors are aware of the heavy financial impact that a bad accident record can have on the price they can bid. Too many take the attitude that insurance is just one of those things they have to buy, not realizing that the amount can be cut materially by a good accident-experience record plus advice from an insurance company as to the type of liability insurance needed for the job being bid.

The construction industry always has had a very much worse accident record than the manufacturing industries. That is due, in large part, to the much higher turnover in employees from job to job. Hence the continuing need for a well planned program of accident prevention on each job.

In general, the construction contractor is concerned with two major categories of insurance—workmen's compensation insurance and public-liability insurance.

• **Workmen's compensation insurance**—Under the workmen's compensation laws of each state the insurance commissioner sets a manual rate for each classification of work such as masonry or excavation. But in addition to this all states now have in operation an experience-rating plan that applies to all contractors operating within the state. Under that plan, a contractor with a good experience record receives the benefit of a percentage reduction below the manual rate, and those with a bad record must pay a percentage above the manual rate.

It is not impossible for such increased insurance rates to become double the manual rate.

This experience-rate modification earned by a contractor follows him from insurance carrier to insurance carrier under the supervision of the state insurance commissioner. Hence a contractor cannot escape from an unfavorable experience-rate modification by changing his insurance company. He must do something about reducing accidents on his jobs.

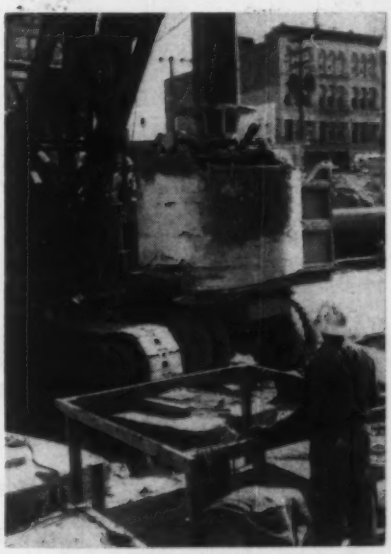
• **Liability insurance**—Worthwhile savings also can be obtained by tailoring liability insurance coverage to fit each job. Liability rates vary with the type of work. Hence the need for close contact between the contractor and his insurance company to make certain the best rate is obtained that is consistent with the hazards of the job in hand.

• **Savings are substantial**—Are the amounts that can be saved by a contractor really worth while? As evidence that they are, see the accompanying table compiled from the actual records of contractors on various types of work at many locations across the country. That table shows percentages of workmen's-compensation premiums saved exclusive of dividends. It also converts the percentage figures to actual dollar savings in annual premiums for four consecutive years.

The fact that 14 contractors, in a period of four years, were able to save $370,000 by giving proper attention to the prevention of accidents on their jobs should be convincing evidence to other contractors that they can put cash in the bank by following similar methods.

How did those contractors accomplish such results? They took advantage of the advisory services made available to them by the company with which they are insured.

That service was designed to assist them in developing ability to operate



A TIMBER RAILING was built around each open hole during drilling for large diameter concrete caissons to support the Detroit City-County Building.

their jobs with a minimum of accident occurance. It puts stress on the principle that production without accidents is good management. Attention is centered on pre-planning, on methods and on organization of the job.

• **An adequate safety program**—The elements of a well organized safety program are these:

1. Top management sets policy. The job must be operated without accident. This charge is made known to the entire line of supervision and right on down to the mechanics and laborers. To do the job the safe way is not just some foreman's notion. The boss wants it that way.

2. Responsibility for carrying out the policy of accident prevention should follow the normal line of authority. Those responsible for getting the job done are made responsible for getting it done safely. Thus, the project manager or the job superintendent, is designated as the safety co-ordinator. He may delegate some of this duty to a high-level supervory individual. However, such delegation does not remove his interest or responsibility in the final result.

3. Safe methods planning is fundamental in the safe operation of a construction project. The study of the over-all project and each individual operation must be made far enough in advance of the undertaking of each operation so that it may be done safely. This may involve the placement of people, the provision of protective devices, proper scaffolding, the provision and placement of construction equipment and a well-thought-out job schedule showing sequence and timing of events.

4. Use of standards is important in the safe operation of a job. Just as the architect and engineer use standards in the design of the structure and in the specification of materials, so should job methods recognize accepted standards in the industry. While it is true that every job is different, and the most valuable superintendent and job foreman is one who can solve his own problems, it is found that the most successful of these resourceful individuals use standards in solving their problems. Their superiority is the result of their vast knowledge of standards and good judgment in how to use them.

5. Education of supervisors and workers must be a continuing process on a construction job. While it is to be expected that the successful contractor has a nucleus of superintendents and supervisors who work much of the time for him, most of the people on each job are assembled for that job alone. Therefore, whatever education in accident prevention is to be done, must be started as soon as the man reaches the job. The few fundamental facts which he must absorb to understand what it takes to be a safe worker must be taught to him fast.

This problem undoubtedly is one of the major reasons for the high accident frequency in the construction industry, in contrast to the accident frequency in the manufacturing industries.

There are many ways used to educate the workers on construction jobs. The simplest ways are usually the best. A few sincere words directed to one or a few men when they start on the job and as they start a new type of operation will get the point across much better than a theoretical harangue on safety. Occasionally there may be use for a safety meeting of a group of workers. However, these should be for a specific purpose involving the control of a certain hazard or the solution of a job safety problem.

6. Investigation of accidents which

Savings in Insurance Premiums Resulting From Favorable Accident-Experience Ratings

Contractor	Usual type of work	Percent of Premium Saved 1950	1951	1952	1953	Savings in Annual Premium over Manual Rate 1950	1951	1952	1953
Atkinson Dredging Co. Norfolk, Va.	Dredging	45.7	52.4	57.0	54.0	$10,205	$9,942	$13,184	$10,214
Bartlett Brainard Co. Hartford, Conn.	Gen. Bldg. Const.	39.0	28.2	18.1	16.0	5,161	2,291	2,699	2,775
Braun & Chamberlain Orange, N. J.	Industrial Painting	17.9	25.7	8.3	11.5	1,498	2,399	726	1,367
Bryant & Detwiler Co. Detroit, Mich.	Gen. Bldg. Const*	10.5	20.7	14.7	9.0	3,797	21,122	15,372	12,378
Dreier Structural Steel Co. L. I. City, N. Y.	Struct. Steel Fab. & Erect.	26.3	31.9	25.8	29.0	9,132	14,067	7,325	10,810
Fitzgerald Bros. Const. Co. Troy, N. Y.	Earthwork & Highway Const.	6.2	13.8	23.5	30.0	934	2,307	5,443	6,052
G. & H. Steel Service Drexel Hill, Pa.	Placing Reinforcing Steel	9.3	9.6	18.8	33.0	3,388	3,864	6,521	3,570
Harrison Const. Co. Pittsburgh, Pa.	Earthwork & Highway Const.	11.5	11.5	19.9	19.9	477	8,280	14,844	13,606
Hughes-Foulkrod Co. Philadelphia, Pa.	Industrial Bldg. Const.	4.2	30.2	25.5	2.1	939	12,435	13,263	669
Kansas City Structural Steel Co. Kansas City, Mo.	Struct. Steel Fab. & Erect.	*9.3	9.2	24.4	34.0	*5,206	4,853	14,417	21,679
LaChase Construction Corp. Rochester, N. Y.	Gen. Bldg. Const.	18.1	*0.6	9.5	18.0	2,944	*94	1,838	3,220
LaCrosse Dredging Corp. Chicago, Ill.	Dredging	24.7	5.2	17.8	19.0	9,903	2,809	9,574	4,362
Thompson Const. Corp. Albany, N. Y.	Gen. Bldg. Const.	2.3	21.6	16.7	37.0	737	8,813	5,378	7,536
Warren Bros. Roads Co. Cambridge, Mass.	Roads and Pavements	24.3	*0.9	8.4	21.0	*4,789	*390	4,495	9,375
Total						**$59,110**	**$93,666**	**$115,079**	**$107,613**

*Debit, i. e., penalty excess over manual rate

GREAT THINGS FOR GREAT NORTHERN . . .

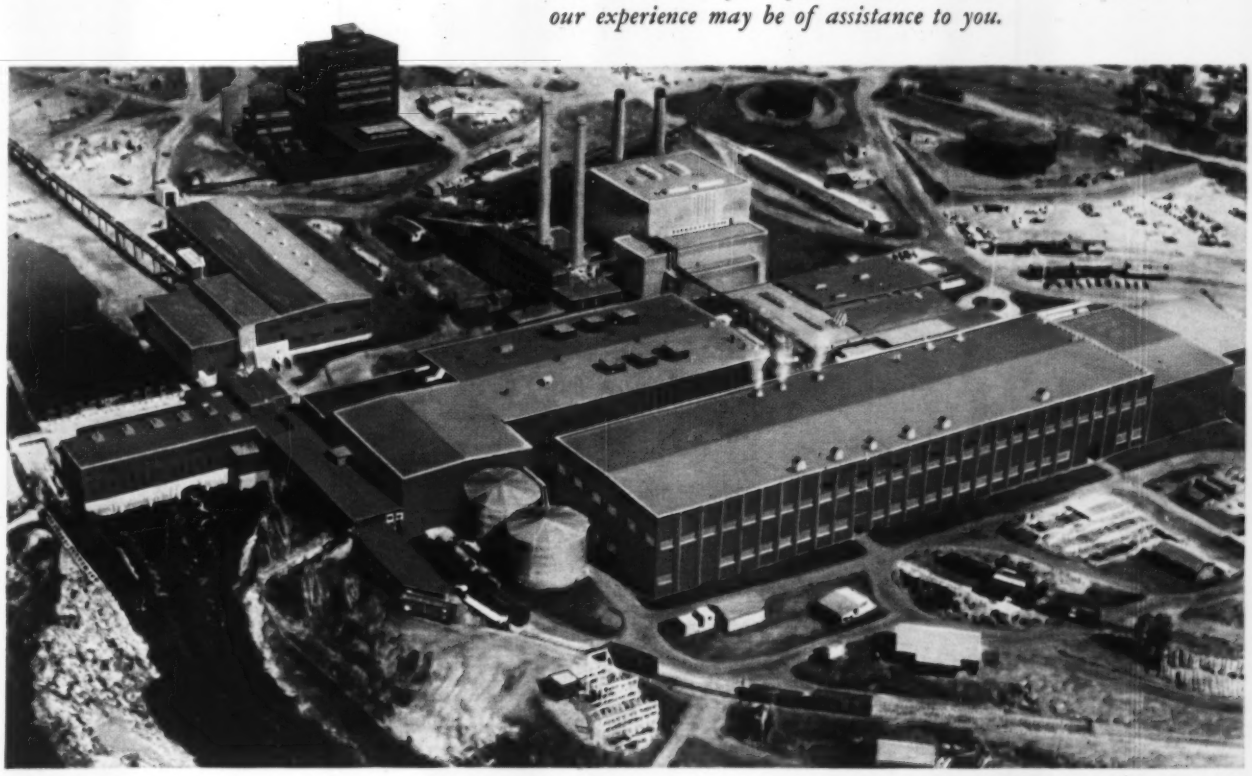
At East Millinocket, Maine, on the West Branch of the Penobscot River, Great Northern Paper Company has completed the first phase of a significant expansion.

The expansion includes a Chemi-Groundwood Pulp Mill for processing hardwood, the first large scale commercial plant of its kind.

Further additions are a woodyard employing advanced handling and sorting methods, new wood and grinder facilities, alterations to the screening processes, two additional paper-making machines capable of operating at 2,500 feet per minute, a new power plant and all related facilities.

Stone & Webster Engineering Corporation was retained for all construction and for the design and engineering of the Chemi-Groundwood Pulp Mill and the Power Plant.

Write or call us for information as to how our experience may be of assistance to you.



The installed capacity of Great Northern Paper Company's newly-expanded mill at East Millinocket, Maine, will be 1,000 tons of newsprint per day.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY *of* STONE & WEBSTER, INC.

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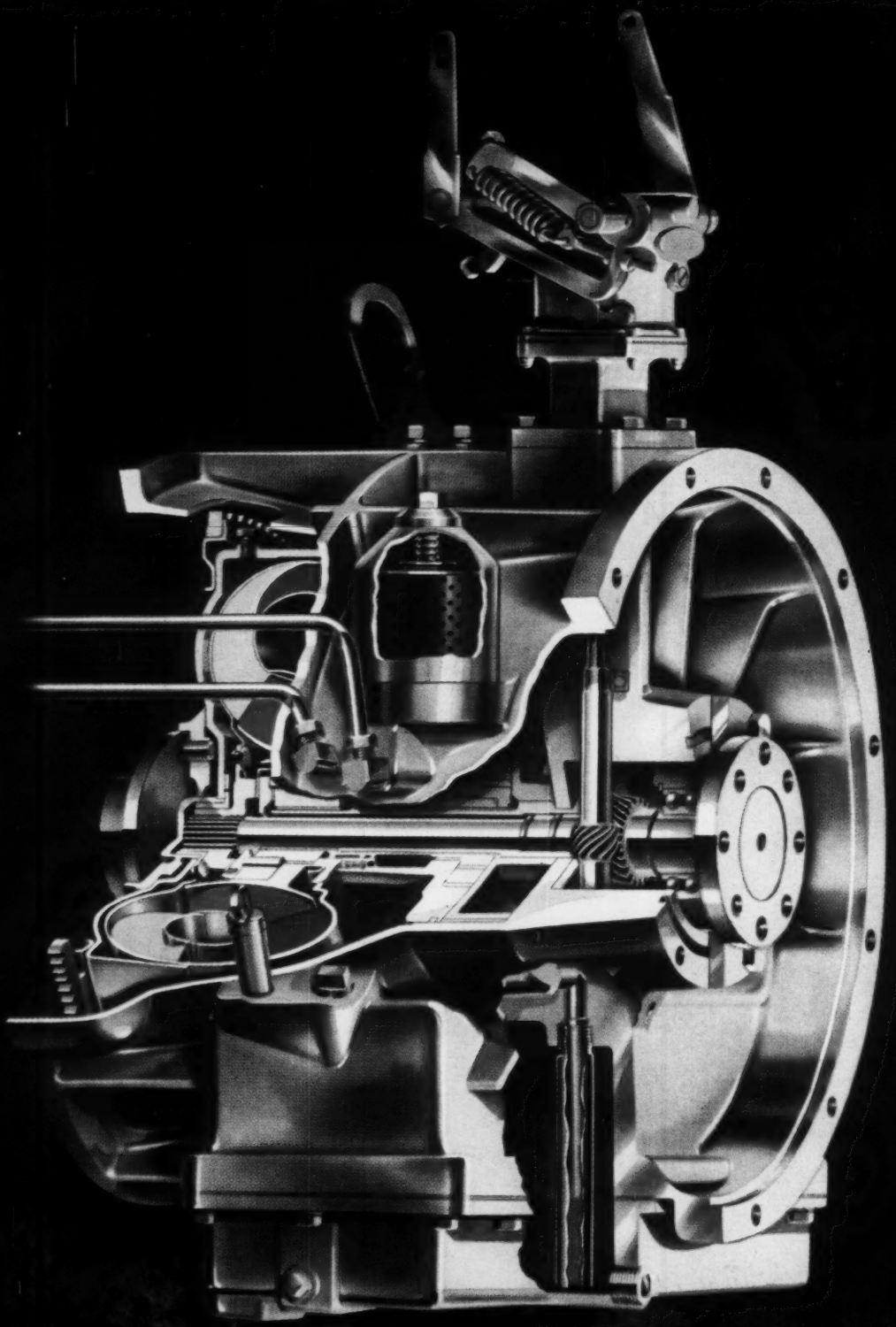
OUTPUT UP-COSTS DOWN



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Now available for installation on Chrysler Industrial Engines

Chrysler—famous the world over for truly engineered performance—offers a New Industrial Torque Converter designed and built to fill the intermittent need for greater torque within the recommended power range . . . employed in any application.

The New Chrysler Industrial Torque Converter provides torque multiplication of 2.6 with almost 97% efficiency in coupling range. For the first time here's a torque converter with provision for a *built-into-the-housing* speed control device. This feature, optional equipment, automatically adjusts torque converter speed to variations in road and load conditions, making it unnecessary to rely on less sensitive engine governor. Dual cooling, liquid and direct-air, dissipates torque converter heat faster enabling more efficient operation.

The engines powering your equipment now may lack the torque they occasionally need. Here's a way to solve that added requirement *without* installing an otherwise unnecessarily large engine. Check into these and the many other advantages of the New Chrysler Industrial Torque Converter. It's two-thirds the weight of cast iron competitive units which include provision for both transmission and power takeoff clutch. Its cost is amazingly low.

CHRYSLER
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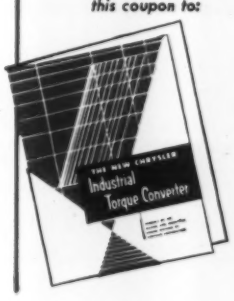

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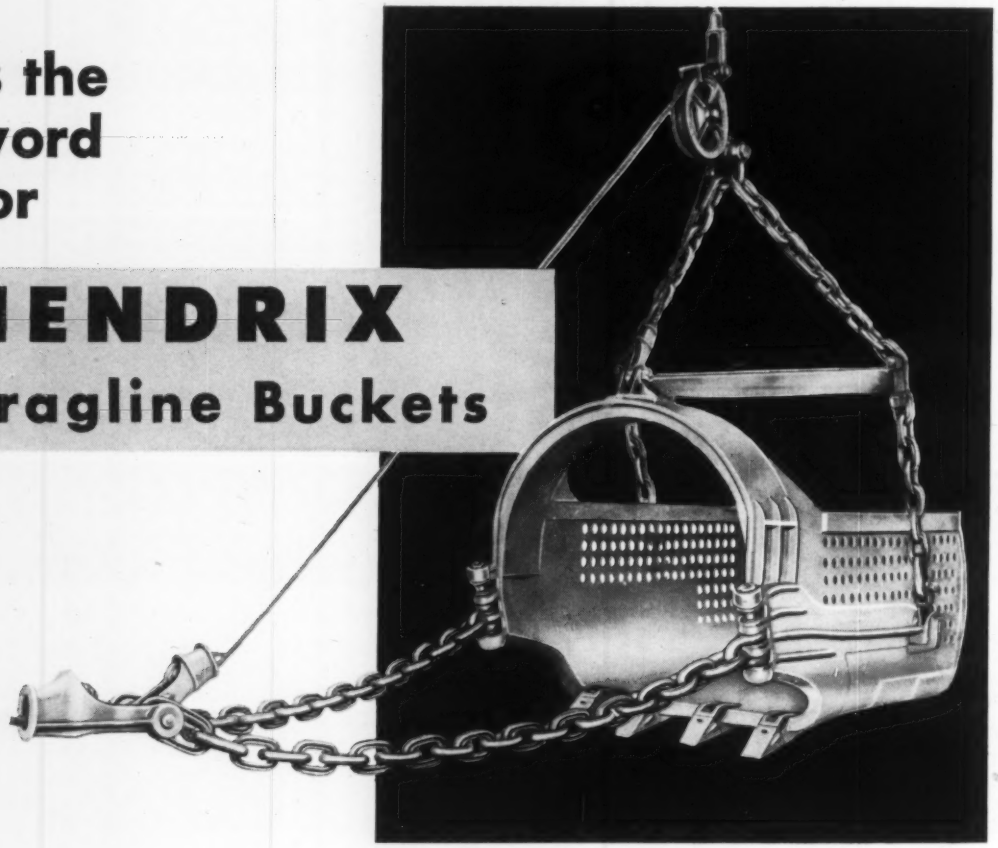

the LONGER LIFE of a HENDRIX Bucket guarantees continued PROFITS on even the most difficult digging operation . . . job after job.

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Hendrix Lightweight DB Dragline Buckets

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations

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MANSFIELD, LOUISIANA

occur in spite of efforts to have no accidents should be immediately and carefully made by representatives of the contractor including the foreman of the gang involved. The objective is not to fix fault, but to determine exactly how the accident happened so that immediate steps can be taken to prevent the recurrence of a similar accident through the same sequence of events. Accident investigation is education by hindsight and should not be overlooked.

7. Inspection of the job should be a continuous function of every operation supervisor. However, the superintendent or the assistant superintendent, should be assigned responsibility for periodic inspection of the whole project in order that his fresh pair of eyes may be used to explore for things and actions which are unsafe. This activity is very productive in finding and eliminating the accidents waiting to happen.

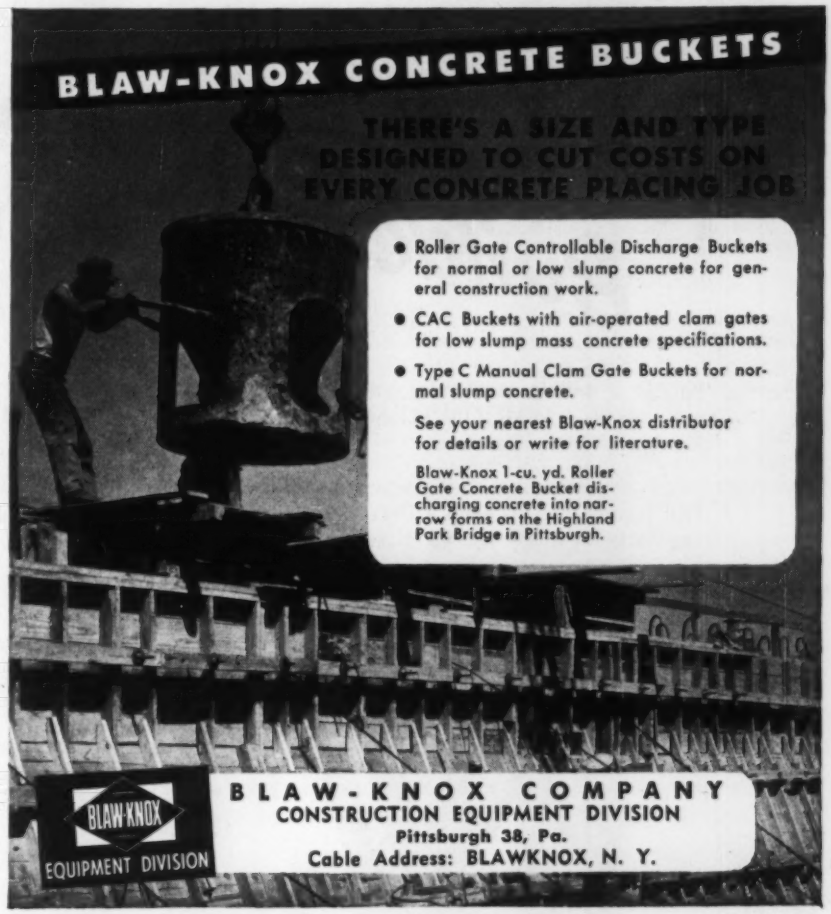
Examples are displaced elevator shaft guards, improperly built scaffolds, lack of shoring, poor piling, inadequate gang organization, improper assignment of equipment, any one of which a morning's inspection may turn up. The job inspection might be considered to be an investigation of the accidents that have not yet happened, with the objective of keeping them from happening.

8. First-aid facilities properly equipped to take care of the kind of accidents that may happen on a project are important to prevent the minor injuries from becoming more serious through neglect or delay in treatment. Whether a job shanty worker such as a time-keeper with American Red Cross training in first aid, or a full time male nurse in a well-equipped first aid building is required, depend upon the nature and size of the job.

9. Accident records should be kept just like job progress reports. Such records provide information on the number of first aid and more serious cases identified by type of injury and type of work being done and identification of the individual and his foreman.

10. Review of accident investigations, inspection reports, and accident records should be made a part of the daily control. Prompt action should be taken to true up job operations in accordance with the indicated need.

Insurance companies stand ready to help contractors to develop such a program, but it is up to the purchaser to make full use of the advice. In the last analysis, the good results are obtained by good management: the good management of the contractor's own organization.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See your nearest Blaw-Knox distributor for details or write for literature.
Blaw-Knox 1-cu. yd. Roller Gate Concrete Bucket discharging concrete into narrow forms on the Highland Park Bridge in Pittsburgh.
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BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
Pittsburgh 38, Pa.
Cable Address: BLAWKNOX, N. Y.

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Turnpike Builders

THREE MARION 111-M SHOVELS SPEED MAINE PROJECT

Nearly 5 million yards of excavating, including a half million yards of rock, is the job of 3 MARION 111-M machines owned by The Nello L. Teer Company of Durham, North Carolina.

Extending the Maine Turnpike, their 4 cu. yd. dippers chew through rock, shale and borrow pits to keep a fleet of trucks on the move. One of the machines also works regularly as a 5½ cu. yd. dragline.

Get the facts about the production of 111-M machines where BIG yardage is needed and the digging is tough.

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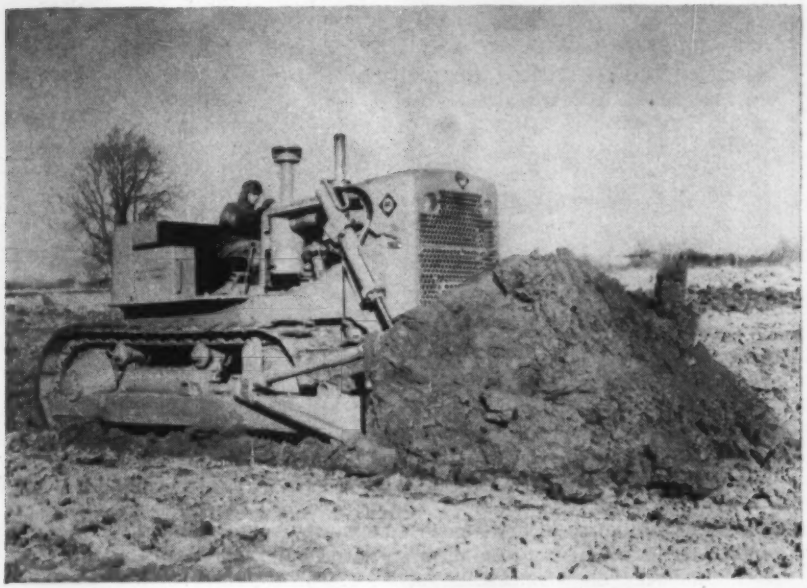


The New A-C Crawler Is a Big One

What is said to be the biggest and most powerful crawler tractor ever put into production is coming off Allis-Chalmers assembly lines at their Springfield plant.

Designated the HD-21, the tractor weighs 44,000 lb, develops 204 hp at the flywheel and will offer a torque converter drive as standard equipment.

Among its new design features are a high-capacity cooling system and radiator guard, a new master clutch and transmission, and a new diesel engine.

A claim for greater efficiency of the new power plant rests on the combustion chamber design. According to the manufacturer, the explosion occurs in a dual-chamber cell when the crankshaft is well past top dead center. This, it is said, results in higher sustained working pressures at the most favorable crankshaft angles and greater work efficiency.

The new "wrap-around" radiator guard is said to reduce the cost of tractor-bulldozer combinations by permitting the hydraulic rams or cable-lift sheaves to mount directly on the new guard. For service accessibility, the guard tilts forward and down.

The design of the all-weather cooling system on the big crawler includes a large, one-piece radiator that handles coolant water only and has an independent mounting to prevent damage. A separate heat exchanger cools the torque converter fluid and an engine lube oil temperature regulator insures proper operating temperatures through winter and summer.

In addition, the track segments are specially heat-treated and annealed to produce, according to the manufacturer, a high degree of wear-ability with maximum toughness. ALLIS-CHALMERS MFG. CO., TRACTOR DIV., MILWAUKEE 1, WIS.

Kerosene Floodlight Now Converts to Propane Fuel

The Tilley floodlight which in the past has been available in only a kerosene-burning model can now be converted to use propane fuel, thereby eliminating pumping since propane tanks deliver fuel at a constant pressure. Another advantage is that the new fuel will not blacken the reflector; also, propane permits use of the lights in temperatures as low as −45 F. Further, a 20-lb tank of the gas provides a 5,000 reflected candle power light for 47 hours.

Users may convert present lights by ordering a conversion kit from manufacturer. Principal items in kit are valve, regulator, hose and bracket. The changeover can be completed in about five minutes. WM. W. LEE AND SON, 20 E. JACKSON BLVD., CHICAGO 4, ILL.

Grout Pump for Clay Pipe Joints Gets Improvements

A new grout pump mechanism for inflating pressure joints on vitrified clay pipe uses a lever action and is said to require considerably less effort to operate than the previous model. The mechanism, replacing a piston action pump, can be attached to any of the present grout pumps, and will be standard equipment on all pumps in the future. The attachment is available at $15, and the complete grout pump for $120 fob, Clairton, Pa.

The pump consists of a reservoir for the grout mixture, a hand-operated pump, pressure gauge and hose with a nozzle. In pressure joint-equipped clay pipe installations, grout is pumped from the reservoir through the hose to the pressure joint, a hollow rubber gasket. Pressure from the pump is measured by a dial indicator on the hose nozzle to make installations simple. CLAY SEWER PIPE ASSN., 311 HIGH-LONG BLDG., 5 E. LONG ST., COLUMBUS 15, OHIO.

(*New Products continued on page 48*)

Here it is—

from

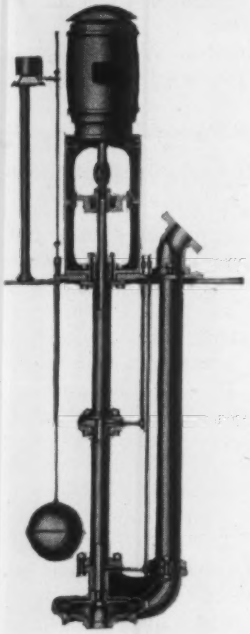
YEOMANS

the

Dependable

Series 8000

Heavy Duty Screenless Ejector that passes minimum solids of 2½"



for Buildings and Industrial Use for liquids containing solids, dirt and trash; for storm drainage; for heavy liquids.

Heavy, close-grained cast iron pump casing streamlined to flow, LUBRI-VAC (R) Lubricating System which provides positive, continuous lubrication, eliminates scoring and increases pump life. High carbon piston steel shaft, turned ground and polished; adjustable single row ball thrust bearing; flexible coupling. Pump casing hung from steel suspension plate. Automatic control. Capacities from 75 to 1200 g.p.m.; heads to 70 ft. Modifications in design and materials for special "problem" wastes.

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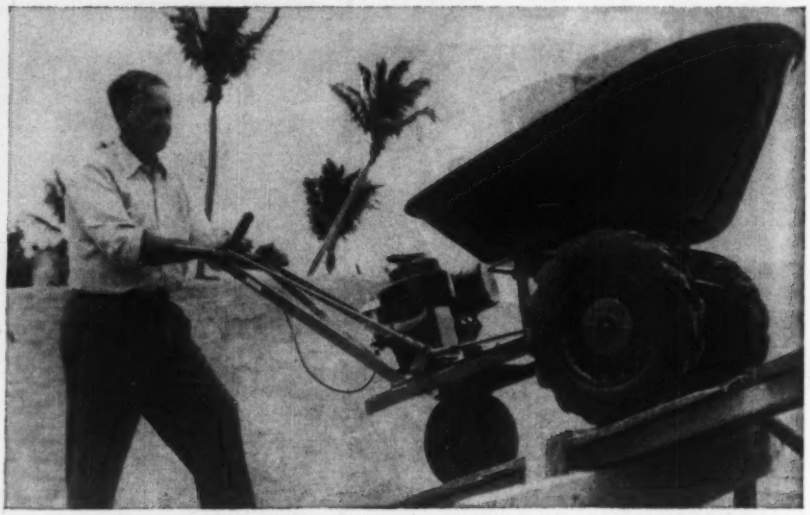
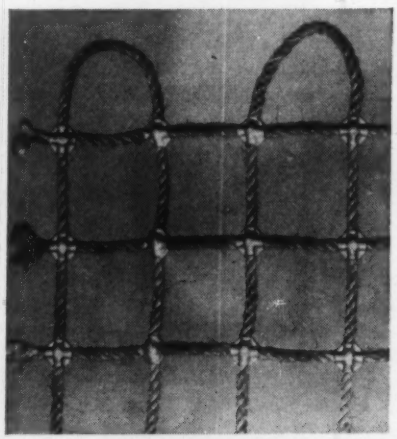


Workhorse Speeds Wheelbarrow Work

The Workhorse, a new, powered wheelbarrow, promises to be an effective timesaver on jobs where small loads must be hauled. A 2½-hp, 4-cycle gasoline engine mounted behind the tray is reported to pull a 300-lb load up a 16% grade with very little effort by the operator. Further, the semi-pneumatic drive wheels have a thick tractor tread to enable the wheelbarrow to ride and drive over rough, irregular ground.

Throttle and clutch controls are mounted on the wheelbarrow handles for convenient starting and speed control. And a free-swinging rear caster wheel permits the Workhorse to be positioned with relatively slight effort. The two drive wheels are positioned under the load for stability and the tray is so balanced that dumping is semi-automatic. Removal of a latch and a slight tug on the handle at the back of the tray dumps the load where desired.

The wheelbarrow is 92 in. long and the width has been kept to 27¾ in. to permit passage through doorways, etc. Tray capacity is 3½ cu ft or the equivalent of 320 lbs of wet loam. Turning radius is 52 in. WORTHINGTON MOWER CO., STROUDSBURG, PA.



Life Nets Have New Clamps

Newly designed life nets with safety L & S section clamps are constructed of ⅜-in. dia manila rope, with a breaking strength of 1,350 lbs. Border lines on all sides are ¾-in. in dia. Nets are available with 4, 6, 8 or 12-in. squares and are made to individual specifications for each job. The rope is chemically treated to make it water-repellent and mildew-proof. The patented intersectional clamps are said to strengthen the net, make every junction fireproof and waterproof and keep the net from curling and knotting. E. D. Bullard Co., 275 8th St., San Francisco 3, Calif.

Movable Rod Face Simplifies Leveling and Note Taking

The Lenker L-E-Vation Rod is an extensible leveling rod, 5.4 ft long closed and 10 ft extended, consisting of two sections held in sliding engagement with each other by guides. An endless flexible steel scale band, 10 ft long, extends around the ends of the upper or face section of the rod and is held in place by the beaded sides of the rod. The scale band is movable lengthwise upon the upper or face section and passes over the end on rollers to permit free action.

Eyelets are placed at regular intervals along the edge of the band, and an adjustable clamp is attached to the lower section for the purpose of engaging these eyelets. When so engaged the band is held stationary with reference to the lower section

without interfering with the relative movement of the rod sections themselves. The numerals on the scale band read downward on the face side of the band.

To operate, assuming that the rod is placed on a bench mark of known elevation 175.2 ft, with clamp loose the scale band is moved by hand, with thumb friction, until the number 5.2 on the face of the band is adjusted to the sight taken through the leveling instrument. The clamp is moved so that its tooth engages one of the eyelets on the band and tightened, locking the band to the lower section of the rod. The rod is now ready for use. If held on a point two feet higher than the B.M. (since the numbers on the face of the band read downward) the reading will be 7.2 or elevation 177.2. A point two feet lower will read 3.2 or elevation 173.2. When a turning point is taken the band is reset to the elevation of the turning point and elevations are read.

The rod is used for any purpose requiring an ordinary leveling rod, and the note book records are reduced to a minimum—only two columns are used, station and elevation. LENKER MFG. CO., 599 CHESTNUT ST., SUNBURY, PA.

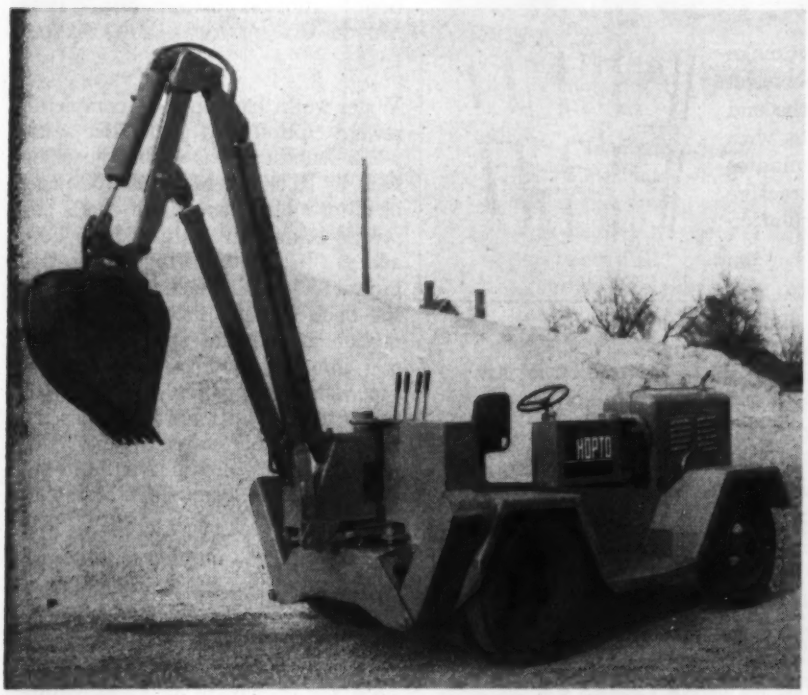
Five-Roller Track Frames Give D4's More Stability

A new five-roller, oscillating-type track roller frame is now available as an attachment for the Caterpillar D4 Tractor.

Installation of this track roller frame on the D4 is said to provide increased traction, greater flotation and better stability, particularly when the unit is operating in hilly terrain and locations where soil conditions are soft or unstable.

A tractor equipped with a five-roller track frame requires a 34 section track in place of the 31 section track included on the standard four-roller machine. If large idlers are used, a 35 section track can be installed. Light-type roller guards are available as attachments for use with the five-roller track frame.

Also available for use with the optional track frame are new tool bar and tool bar bulldozer arrangements. The draft members of this tool bar are longer to permit a single position for the trunnion plates, reportedly making possible rapid changeover from front to rear operation by simply swinging the draft members to the desired position. CATERPILLAR TRACTOR CO., PEORIA, ILL.



Excavator Has Rubber-Tired Mounting

A new self-propelled excavator, called the HOPTO Model 185 SPR, consists of a standard Hopto Digger mounted on a rubber-tired carrier. The 185 can dig approximately 11 ft deep and is available with buckets from 8 to 36 in. in width; swing of the unit is a full 180 deg. Hydraulic outriggers are built into the machine as an integral part, and individual operation permits the operator to level the unit from the carrier seat. Power is supplied by a Continental 226 water-cooled engine. Badger Machine Co., Winona, Minn.

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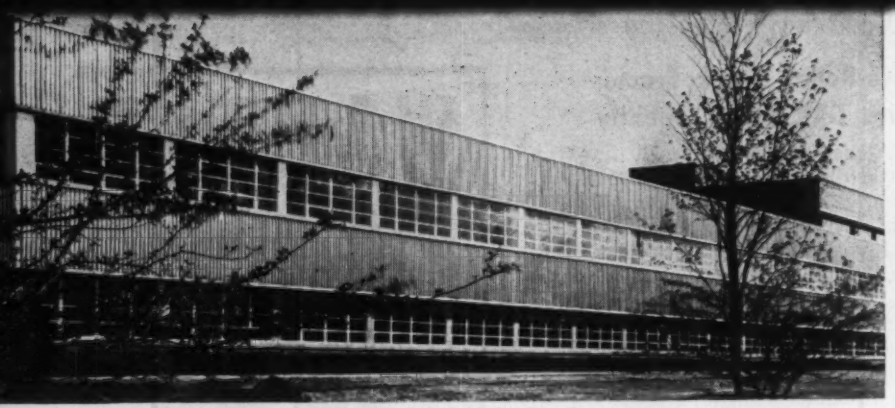
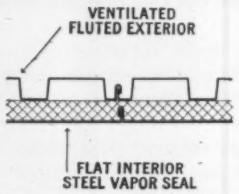


An office building designed by Giffels & Vallet & L. Rossetti, Associated Engineers and Architects, Detroit.

3 Good Technical Reasons For Specifying Robertson Q-Panels

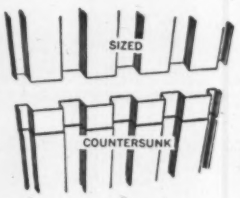
1

Continuous Sealed Joints The interlocking side lips on both the inner and outer surfaces of the panels are caulked to provide a continuous sealed joint. Thus, when the panels expand or contract, the joints do not separate but remain in contact with the caulking material. This efficient side joint effectively maintains the insulation qualities of the wall and prevents the infiltration of air, dirt and moisture.



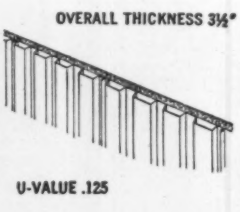
2

Flush Lap Joint Special conditions often make end-joints unavoidable. All standard Robertson Q-Panels are die-set and countersunk at the end lap, producing neat, almost invisible joints, with full insulation at that point. This feature eliminates the inefficient butt-joint with its unattractive through-wall flashing and consequent insulation loss.



3

Efficient Insulation The U-Value of an M-Type Q-Panel wall is .125 BTU per sq. ft. per hr. per °temp. diff., F. This was established by careful tests made at one of the nation's leading industrial research laboratories. Special attention was given to thermal conductivity at all critical points along the wall and the established U-Value is an average over a stretch of wall involving several side laps. Use the coupon to write for details.



H. H. Robertson Company

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PUBLICATIONS

Highway lighting—A 24-page catalog devoted to Hy-Lite prestressed concrete standards for street and highway lighting contains engineering tables and descriptive information on design features and mounting arrangements. Also included is data on a choice of base type including transformer, precast butt and bolt down. In addition to numerous installation photos, several pages deal with the making of these standards, specifications and special upright standard applications. American Concrete Catalog No. 300. American Concrete Corp., 5092 N. Kimberly Ave., Chicago 30, Ill.

Diesel trucks—A new folder describes the diesel trucks manufactured by the Autocar Div. Two pages are devoted to illustrations showing the use of the big diesels while another four pages are devoted to a chassis illustration surrounded by pictures of some of the outstanding features. Included in these features are the tandem rear axle, nut and bolt construction, Autocar-Cummins diesel engine, the many types of transmission and the driver cab. The back cover points up additional features of the line. The White Motor Co., Autocar Div., Exton, Pa.

Water works handbook—A completely revised edition of a pocket-size water works handbook has recently been issued by Rockwell Mfg. Co., 28 pages of water meter change gear charts and several other new features have been added. In addition to specification tables for all the company's meters, the book includes such general information as standard specifications for cast iron and standard wrought iron pipe, table of equation of pipes, water meter testing hints and tables, instruction for reading water meters, water use rate tables, flow charts, hose and fire stream data. Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.

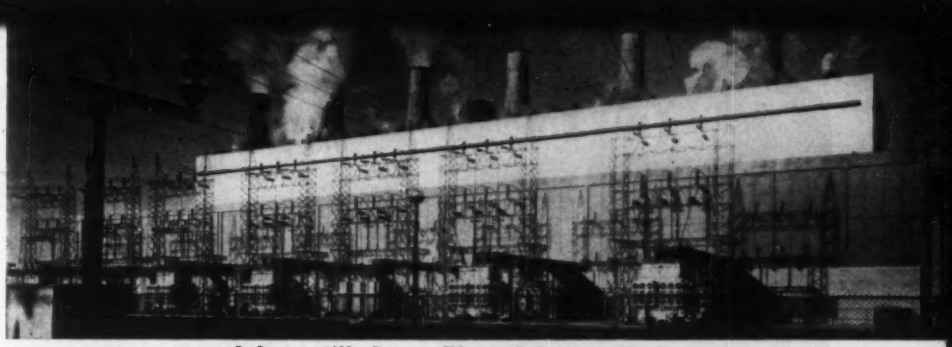
Welding—The latest developments in the science of welding aluminum are described in the new book "Welding Alcoa Aluminum". In the 176-page book the knowledge of the company's Research Laboratories is combined with the practical experience of its Process Development Laboratories. Photographs and drawings are coupled with the comprehensive text to illustrate all the practical methods for welding aluminum. These include torch welding, arc welding, resistance welding and pressure welding. Spe-

cial attention is given to selection of welding method, performance of welds, welding of aluminum castings and control of welding quality. After an introductory section that explains characteristics of welded joints, the book describes how to select the best method for welding aluminum. Comprehensive descriptions of the methods for welding are presented in the six chapters that follow. Welding of aluminum castings is explained in the next chapter, and this is followed by a discussion of the pressure welding methods and applications. The final section is composed of 32 comprehensive tables giving important data on welding aluminum. ALUMINUM CO. OF AMERICA, 733 ALCOA BLDG., PITTSBURGH 19, PA.

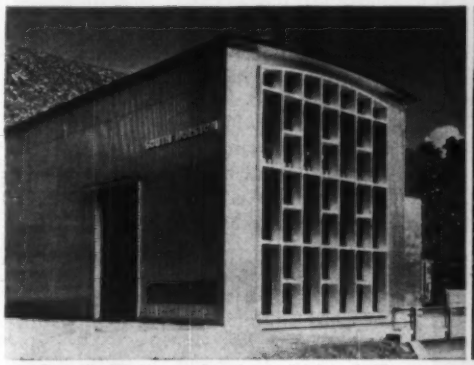
Truck crane—A booklet reports on P&H truck cranes. Devoted to the P&H Models 255-A, 355-A and 555-A, the bulletin gives a broad picture story on these machines. Within its 28 pages, in addition to dozens of large-size on-the-job pictures are complete descriptions and specifications of important features such as carriers, power plants, torsion bar front axles and convertibility. An interesting feature of the book is the story on the take-down of crane booms for road travel. Sequence photographs are used to show this. Bulletin TX-143. HARNISCHFEGER CORP., SMALL EXCAVATOR DIV., 4602 W. NATIONAL AVE., MILWAUKEE 46, WIS.

Reinforcing steel service—An 8-page bulletin describes what is referred to as a specialized service to the construction industry on high-bonding type concrete reinforcing bars, wire fabric, spirals, expanded metal, caisson rings, reinforcing accessories and other steels for building construction. Services include the drawing of setting plans, fabrication of reinforcing bars and related products, tagging the steel according to setting plans and timed deliveries based on progress of the job. JOSEPH T. RYERSON & SON, INC., BOX 8000-A, CHICAGO 80, ILL.

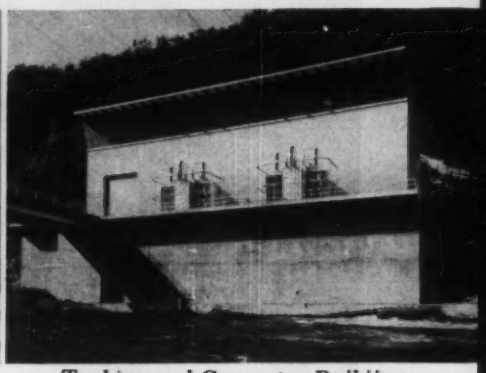
Well screens for water wells—A catalog covers the function which well screens play in developing high-capacity, sand-free wells and the different types of well screens that are available to meet specifications and method of installation. Other topics covered are the selection of the proper well-screen metal for diferent applications, screen installation and the development of water-bearing formations. Methods of gravel treating wells are discussed and technical bulletins available for free distribution are listed. Catalog No. 154. EDWARD E. JOHNSON, INC., 2304 LONG AVE., ST. PAUL 14, MINN.



Johnsonville Steam Plant, Johnsonville, Tenn.



South Holston Project, Bristol, Tenn.



Turbine and Generator Building, Watauga Dam, Elizabethton, Tenn.

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In TVA installations, as in power stations everywhere, Robertson Q-Panel walls are popular because they are practical as well as beautiful. Beyond good looks, here are some very practical reasons for specifying Q-Panels: 1. Q-Panels are permanent, dry and noncombustible, yet may be demounted and re-erected elsewhere to keep pace with expansion programs. 2. Q-Panels are light in weight, thus reducing the cost of framing and foundations. 3. Q-Panels have high insulation value . . . superior to a 12″ masonry wall. 4. Q-Panels are quickly installed because they are hung, not piled up. An acre of wall has been hung in 3 days. For more good reasons for using Q-Panel construction, use the coupon below to write for literature.

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INTERNATIONAL

Britain's Roads

Trunk highways, neglected since 1939, to undergo $412 million modernization

Britain is due to start a four-year $412-million highway program to rebuild and revamp its major road systems, which have had little or no attention since 1939. Transport Minister John Boyd-Carpenter told Parliament that government expenditure in the first year of the program would be $75.6 million—a sum which is to be supplemented by funds of local authorities.

Main trouble with British roads is a familiar one: too many vehicles for the road system in existence. Spending on new construction and major improvement in 1938-39 was over $80 million, but since the war, spending has averaged less than $14 million a year. Allowing for higher costs today, new construction in the ten years since 1945 is little more than that done in the last year before the war. Trunk roads then cost about $220,000 a mile; today costs are up to $700,000 a mile.

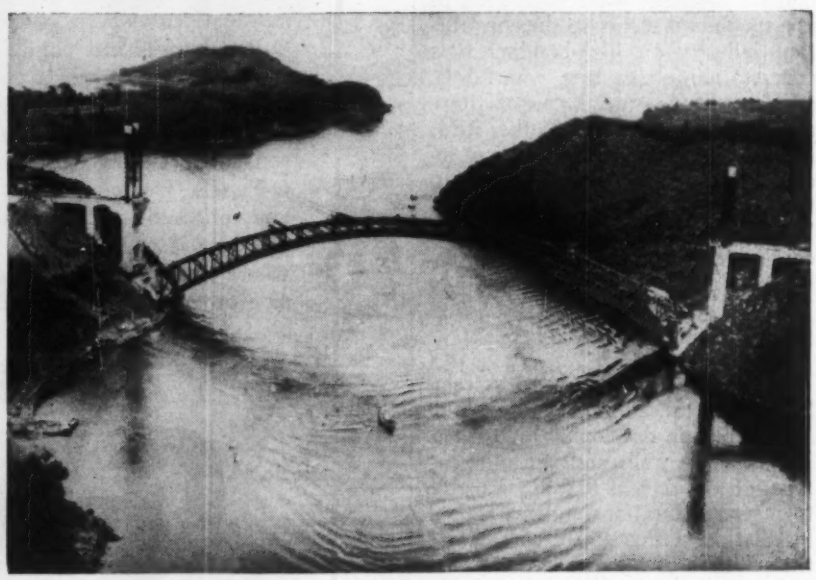
Last year, the Transport Minister said, he had 20 years of road expansion projects on his desk awaiting approval, totalling over $3 billion.

Total road mileage in Britain (186,000 miles) has increased less than 6,000 miles since 1939. Since 1947, trunk highways have increased only 64 miles. But number of vehicles on roads has increased from 3,515,444 in 1947 to over 5,500,000 today.

The condition of Britain's secondary roads is excellent and largely adequate. Trouble is on main trunk lines in areas such as those around London and along the main inter-city routes. Except for occasional five or ten mile stretches, there are no main divided highways. Nowhere are there any roads such as the main superhighways leading in and out of New York, Los Angeles, Chicago, etc.

One big problem and annoyance in Britain is diversion. Of $1.1 billion dollars collected annually in various road taxes, only about 10% is spent on roads. Although the Transport Minister has suggested toll financing in "suitable areas", the motoring public is violently opposed to toll roads as a solution.

The program includes widening, dualization, limited access, and grade separations for existing rights of way, along with construction of many entirely new roads. It's a nightmare for the motorist trying to get in and out of cities like London, and going across or around them is even worse.



One of the World's Largest Steel Arch Bridges

Japan's new single-span steel arch bridge linking Nagasaki with Sasebo, Kyushu Island, is the fourth largest structure of its kind in the world. The bridge, just completed at a cost of about $1.5 million, is 712 ft high at the center and 1,042 ft long. The world's largest steel arch bridge is the 1,652-ft-long Kill Van Kull span in New York City. Second is Australia's Sydney Harbor Bridge, 1,650 ft long. Birchenough Bridge (Zambezi River in Southern Rhodesia) is third with 1,080 ft.

Lion's Gate Bridge Sold to British Columbia Government

Lion's Gate Suspension Bridge—famous Canadian span across the entrance to Vancouver Harbor—has been purchased by British Columbia and added to its public highway system. At the same time, the province announced plans to build at least one other Burrard Inlet crossing.

The 17-year-old bridge, bought from First Narrows Bridge Co., Ltd., for $5,595,060, has the longest (2,778 ft) suspension span in the British Commonwealth. The company, set up by Guinness Brewery interests of England, built the bridge at a cost of about $6 million to provide access to a large real estate development in North Vancouver. An independent appraisal recently set the replacement cost of the bridge at today's prices at $10,032,540.

Public works engineers will start at once to survey the whole Burrard Inlet crossing problem. Results will determine whether construction of one or two new bridges—or tunnels—will be undertaken. Plans now being considered call for a bridge that duplicates and parallels the existing Lion's Gate structure.

Britain Sets Record For European Tunneling

Driving 428 ft in seven 24-hr working days, a crew of the Mitchell Construction Co. is claiming a new British and European tunneling record on the North of Scotland Hydro-Electric Board's Breadalbane project.

According to the Atlas Diesel Co. of Stockholm, six of whose light-weight drills were used in the 10-ft bed-width Glen Almond tunnel, 18,300 ft of shot holes were drilled and a total of 66 rounds were fired and mucked during the seven days, giving an average pull of 6.4 ft per round.

The 45-lb drills were mounted on pusher legs. The tungsten-carbide-tipped drill steels of $\frac{7}{8}$ in. hollow hexagon sections with bit diameters of $1\frac{1}{2}$ in. averaged 1,000 ft of drilling. The amount of explosive per round averaged 140 lb of polar ammon geligite, used with half second delay detonators. The rock in the tunnel is a hard epidiorite.

The U. S. driving record on a comparable size tunnel is attributed to the Carlton Tunnel at Cripple Creek where an 1,879 ft advance was made in 31 days on a 10x11-ft cross section. This is a 424 ft weekly advance on the average, so that the best seven consecutive days was probably in excess of the new record for Europe of 428 ft.

(*International continued on page 54*)

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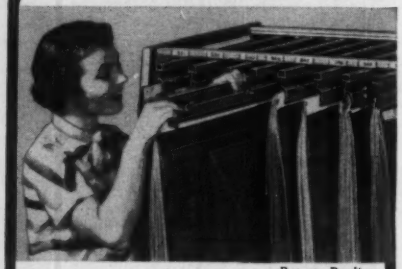

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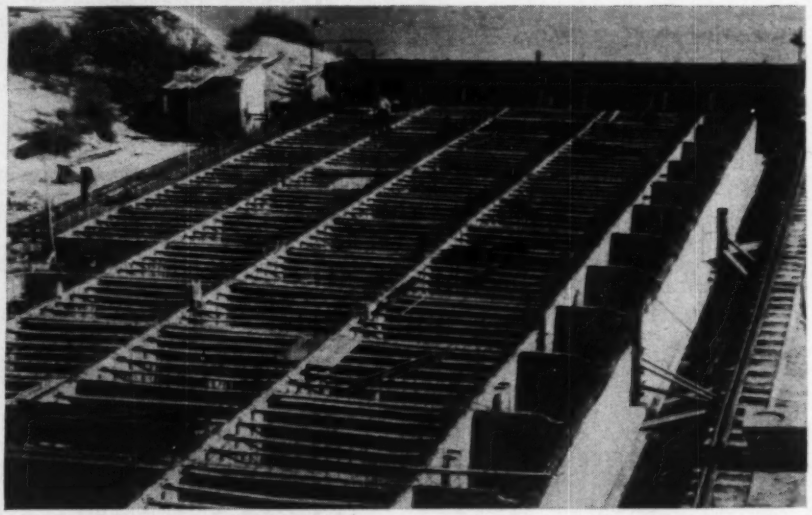
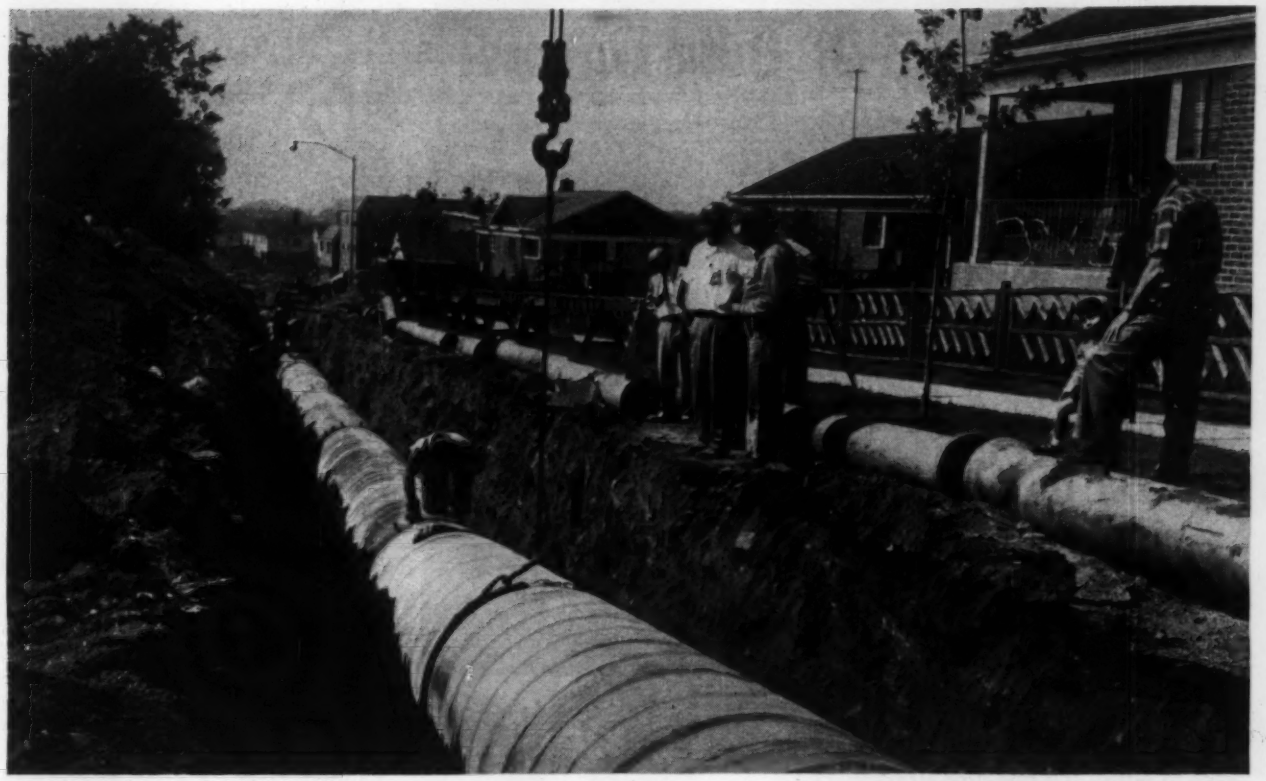


. . . Made of 387-ft Concrete Pontoons

Five new floating concrete pontoons, each 387 ft long, 50 ft wide and 12 ft thick at the center, have replaced 106 old steel tanks forming a landing stage in the Elbe River at Hamburg, Germany. War had damaged the old landing stage and replacing it with concrete pontoons rather than steel proved cheaper both in construction and maintenance. The larger mass of the new wharf floats more quietly in the water so that wood piles holding and guiding the pontoons are subjected to less wear. A floating wharf at Hamburg is necessary to serve mooring steamers at all tides without difficulty (average tidal fluctuation is 7 ft 6 in.). Each pontoon is divided by ten transverse and three longitudinal bulkheads to provide 44 watertight compartments. Each compartment is reinforced with 18 transverse and 2 longitudinal cross walls with apertures. The pontoons were built on piles in a pit, excavated at the river bank, which was flooded on completion of the work, and the pontoons floated out into the river at high tide. Upper concrete decks for the pontoons were not placed until pontoons were in final position in order to reduce their draft when launched. Dykerhoff & Widmann and Phillip Holzmann were the contractors.



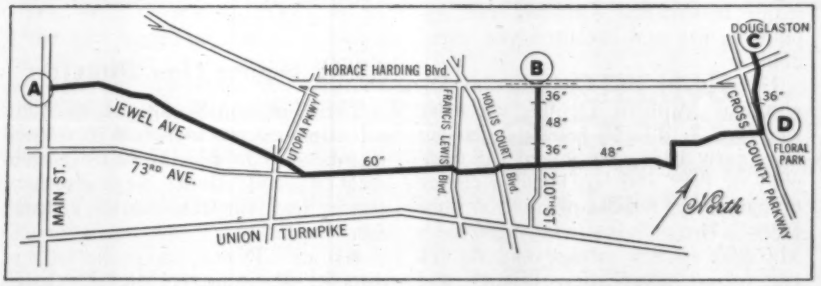
Long string of 48-in. pipe being laid on 73rd Ave., bordering Alley Park. The small-diameter pipe in the picture is for local feed only.

6-Mile Tar-Enameled Steel Water Main Under Way in Fast-Growing Queens, N. Y.

Few areas in the land have grown as fast as the Borough of Queens, New York City, which occupies the entire northwest section of Long Island. To keep pace with the resulting vastly increased water demands, the Bureau of Water Supply of the Department of Water Supply, Gas and Electricity is expanding its water supply system.

A major project which got under way in 1954 extends one of the Queens trunk mains from Main Street in Flushing 6 miles to the Douglaston Pumping Station, and provides for future development in the Floral Park area.

The new main consists of Bethlehem Tar-Enameled Steel Pipe of large diameters: 20,350 feet is 60 in. ID; 8,080 feet is 48 in. ID; and 2,860 feet is 36 in. ID. The pipe, in 40-ft lengths, was hydrostatically tested, coal-tar enameled inside and out, wrapped, and drilled for riveting at Bethlehem's Steelton, Pa., pipe shop. Bethlehem also supplied numerous bends, reducers and other pipe specials. Contractor for installation of the line was Tibbetts Contracting Corp. of Yonkers.



Simplified map shows the route of the new trunk main. Connecting with the existing 72-in. steel line at (A) and the existing 48-in. steel line at (B), it serves the entire area from Main St. to Douglaston at (C). Plans have already been made to supply the Floral Park area by tapping the main at (D).

When you're planning your next water or sewage line, the wisest move you could make would be to pick up your phone and dial the nearest Bethlehem sales office. They will be happy to give you full information about Bethlehem Tar-Enameled Steel Pipe.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM *Tar-Enameled* STEEL PIPE

END 50° SLOW-UP IN SPRING CONCRETE

Save 2-4 Days with

SOLVAY CALCIUM CHLORIDE

A temperature drop from 70° F. to 50° F. will reduce the one day strength of concrete almost 40% . . . a drop to 40° cuts strength development over 60%. This means that concrete at 50° takes two full days to equal the one-day strength of concrete at a normal 70° temperature. Proportionate losses occur at two, three and seven days.

The addition of Solvay Calcium Chloride more than offsets these concrete strength losses due to lower spring temperatures . . . and gives the additional benefits of increased workability, greater ultimate strength, and positive uniform curing.

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NAME .....
COMPANY .....POSITION.....
ADDRESS .....
CITY..... ZONE.... STATE.....EN-3

MEN AND JOBS

S. E. Friedeberg

Elected NSPE Director

Solon E. Friedeberg, an associate of Sears and Kopf, New York consulting engineers, has been elected a national director of the National Association of Professional Engineers.

Before joining Sears and Kopf, Friedeberg was vice president of Franklin Engineering Corporation. Previous associations were with Iron Fireman Co. as consulting engineer, American Gas Kiln Corp. as chief engineer, and Combustion Engineering Corp. as superintendent of the industrial department.

Merritt-Chapman & Scott Revamps Its Organization

Merritt-Chapman & Scott Corp. has completed an extensive administrative reorganization, regrouping its expanded industrial activities within four major operational divisions and appointing five new executive vice presidents.

Heading up the Construction Division is William Denny, executive vice president and general manager since early 1953. He joined the company in 1927 and has been in charge of marine and heavy construction since 1951. His new division includes M-C&S's marine salvage and derrick and inland salvage departments, and its construction subsidiaries, FitzSimons & Connell Dredge & Dock Co. and C. A. Pitts General Contractor, Ltd., of which Denny is a director.

Of the newly appointed executives, Milton T. Smith, who joined M-C&S last year as vice president and general manager of Marion Power Shovel Co. and the Osgood Co., will have charge of the Equipment Division. Robert E. Harvey takes over the Steel Division. He came to the company last year as executive vice president of Newport Steel. Operational executive of the new Manufacturing Division has not yet been named.

Luria Engineering Company Names Two Vice Presidents

Edwin H. Webster and E. Gordon Ball, Jr., have been named vice presidents of Luria Engineering Company, Bethlehem, Pa., designer and producer of standardized steel structures and aircraft hangers.

In his new post, Webster will be in charge of production and purchasing. He joined the firm in 1948 as construction superintendent, becoming general manager in 1950. Earlier in his career, he was associated with Johnson, Drake & Piper, Inc., American Airlines, Dravo Corporation and American Bridge Company. He is a graduate of the University of Pennsylvania and served with the Navy Seebees during World War II.

Ball's new duties place him in charge of sales, succeeding Grant A. Sattem, recently elected executive vice president of Luria Cournand, Inc., structural plastics engineering and fabricating concern in Maryland.

Educated at the Universities of Ilinois and Hawaii, Ball came to Luria in 1948, after completing a series of construction assignments in Hawaii. These included superintending dry dock construction at Honolulu for the Pacific Bridge Company of Los Angeles, supervising naval ship salvage after the attack on Pearl Harbor, and serving as civilian superintendent of construction for the Corps of Engineers at Hawaii.

ASME Names New Directors

The American Society of Mechanical Engineers has increased its council membership to provide broader technical representation. New directors, serving one year terms on the council, are:

- Joseph Pope, vice president and director of Stone & Webster Engineering Corporation, New York. He joined the engineering firm in 1912 and is also a vice president and director of Stone & Webster Construction Co.
- E. O. Bergman, staff consultant

with C. F. Braun & Company, Alhambra, Calif. Currently a consultant to the Bureau of Reclamation, he taught civil engineering and mechanics at the University of Colorado prior to joining the California firm in 1938.

• Jess Davis, president of Stevens Institute of Technology, Hoboken, N. J. A former president of Clarkson College of Technology, he has served as an industrial consultant to a number of firms.

Men and Jobs Briefs . . .

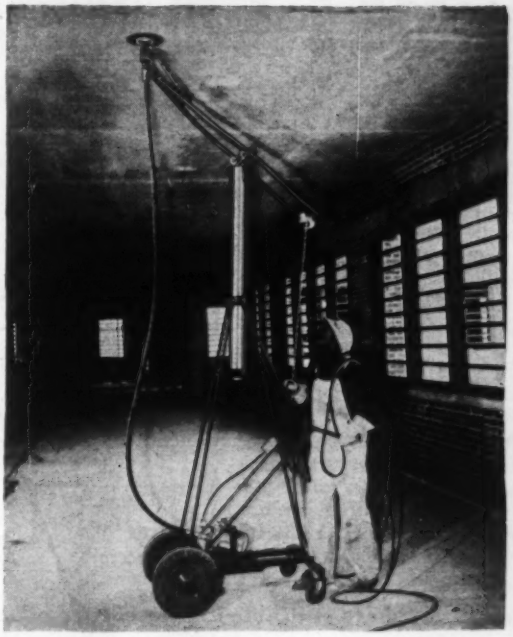
• **Careers**—Corps of Engineers, Portland District, names **Ernest C. White** project engineer on the Dallas-Celilo Canal, replacing **Wheeler H. Rucker** . . . **Herbert C. Johnson** is appointed chief smoke regulation engineer in Columbus, Ohio . . . **Robert S. Millar** is named assistant manager of the Denver Board of Water Commissioners—he was manager of the Wichita Water Co. . . . **E. Arthur Bell,** water superintendent and borough engineer, Essex Fells, N. J., resigns to join Stamford (Conn.) Water Co. as chief engineer.

• **Associations**—Associated Builders and Contractors of Maryland elect **William H. Wildberger,** head of Wildberger-Best Construction Co., president . . . **Allen D. McCombs,** president of John F. Casey Co., Pittsburgh, becomes president of Constructors Assn. of Western Pennsylvania . . . **William C. Ward** is named head of Allied Construction Industries of Delaware . . . **E. A. Millar** is reelected secretary-treasurer of Metal Roof Deck Technical Institute . . . A state association of county engineers is being organized in Florida—first meeting is in Jacksonville Mar. 24.

• **Business**—Mellon-Stuart Co., Pittsburgh contracting engineers, elects **Chester F. Beall** a director . . . **Andrew J. Sordoni, Jr.,** becomes president of Sordoni Construction Co., Wilkes-Barre, Pa. . . . **Richard M. Troy** and **Homer Ferguson** are named associates of the Toledo, Ohio, engineering firm of Peterson, Hoffman & Associates . . . **Stanley G. Langefels** is elected president of A. M. Kinney, Inc., Cincinnati engineering firm.

Stephen C. Moxley becomes president of American Cast Iron Pipe Co., Birmingham, Ala. . . . **Phillip Hoel** is appointed manager of Clark Equipment Co.'s new Pipestone Road Plant in Benton Harbor, Mich. . . . **Robert J. Ritchey** is named market development manager for United States Steel Homes, Inc., U. S. Steel Corporation subsidiary . . . **A. C. Kraft** is appointed manager of Caterpillar Tractor's New York City office . . .

RUBBING CEILINGS?



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NEW YORK CITY SALT LAKE CITY

HERE'S HOW TO AVOID BEARING REPLACEMENT HEADACHES

says **HY WHEELER,**
the sage of the socket wrench!

1. *Always* replace a Hyatt with another identical Hyatt.

2. Make sure shaft and housing bore seats are clean and smooth.

3. When pressing on inner races start bearings on shaft with rounded corner radius of race going first.

4. Direct the driving pressure straight and square, directly through race to be press fitted. Never hammer directly on races or rollers, and never use a wooden or soft metal mallet (chips or splinters may get into the bearing).

5. Use a lot of sharp quick taps instead of a few heavy ones; have straight square ends on driving accessories and fixtures, and drive races solidly up against shoulder of shaft or housing.

6. *Keep your hands and tools clean;* don't remove bearings from package until you're ready to use 'em—and most important of all, *be sure the package is the blue and yellow Hyatt box!* Remember, when it comes to *quality,*

there's no substitute for...

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

OBITUARIES

Lt. Col. Homer G. Olmstead, 73, U. S. Army Engineers, retired, died near Willis, Texas, Jan. 12. He was officer in charge of construction at Ellington Field, Houston, Texas, from January, 1941, to June, 1942, when he was assigned to Camp Hood as Post Engineer. A veteran of World War I, he was a consulting engineer in Houston for many years before being called to active duty.

Frederick W. Dencer, 78, authority on structural steel fabrication and an employee of the American Bridge Co. for 40 years, died Feb. 18 in Chicago. After receiving his civil engineering degrees from Purdue University, he spent three years in railroad bridge design. He joined American Bridge Co. in 1901 and from 1911 to 1929 was engineer of the Gary, Ind., plant. He was then promoted to assistant division engineer, a position he held until retirement in October, 1941. He was author of the book "Detailing and Fabricating Structural Steel".

Harry C. Coons, deputy commissioner of the Michigan State Highway Department for 21 years, died Feb. 16. Coons—who supervised most of Michigan's major road improvements in the last two decades—began state highway work as a resident and district engineer. Then, for 11 years, he worked as county road engineer and private road builder. He rejoined the commission and since 1933 has served as chief highway engineer as well as deputy commissioner.

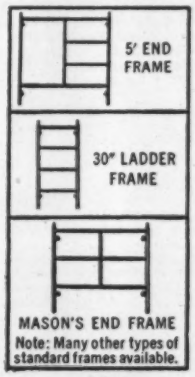
Alfred S. Wheeler, 63, senior hydraulic engineer for the California division of water resources, died in Sacramento, Calif., Feb. 13. He received his civil engineering degree from the University of Washington. From 1910 to 1916 he was employed in British Columbia by the Canadian Pacific Railroad and the B. C. government. From 1917 to 1924 he was a construction engineer for mining interests in northern California. He entered state service in 1924.

Julian N. Ball, 65, formerly a civil engineer with Morrison-Knudson Co., died Jan. 17 in Denver. He attended the University of Nebraska. For the past five years he worked as a civil engineer with several Denver firms.

Abraham A. Kaplan, 49, a civil engineer in the design division of the Philadelphia Naval Base Shipyard, died Jan. 29.

HANGING SCAFFOLD SAVES CLEVELAND CONTRACTOR $1,500.00

William MacDonald, Masonry Contractor, estimates this unique scaffold, hanging nine stories over the street, will save him 90% of the scaffold ordinarily needed. It was built of standard Waco parts.



With more types of frames, accessories and units to choose from in standardized models, Waco Scaffolding fits a wider variety of scaffolding jobs. You save TIME, TROUBLE and MONEY WITH WACO!

Contractors and mechanics in all trades have found that the many exclusive Waco time-saving features add up to substantial cash savings on all types of scaffolding jobs.

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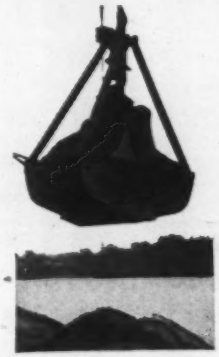
Columbia, South Carolina
Dallas, Texas
Denver, Colorado
Detroit, Michigan
Fort Smith, Arkansas
Forty-Fort, Pennsylvania
Green Bay, Wisconsin
Greensboro, No. Carolina
Holbrook, Massachusetts
Houston, Texas
Indianapolis, Indiana
Kansas City, Missouri
Lakeland, Florida
Las Vegas, Nevada
Long Island City, New York
Los Angeles, California
Mankato, Minnesota
Miami, Florida
Milwaukee, Wisconsin
Minneapolis, Minnesota
Montgomery, Alabama
Muskegon, Michigan
Newark, New Jersey
Oklahoma City, Oklahoma
Omaha, Nebraska
Philadelphia, Pennsylvania
Phoenix, Arizona
Pittsburgh, Pennsylvania
Portland, Oregon
Portsmouth, Virginia
Salt Lake City, Utah
San Antonio, Texas
San Diego, California
San Francisco, California
Spokane, Washington
Stockton, California
Tuscon, Arizona
Utica, New York
Washington, D. C.

STANDS UP TO SEVERE USE



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One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so.

This Class K Clam Shell, for example, has the knack of loading itself up to the hilt — *every time.* No skimping here! No contact between closing mechanism and load. That means less rope wear. Less upkeep!

A Hayward bucket is built to make good — and it does. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church Street, New York 7, N. Y.

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CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES
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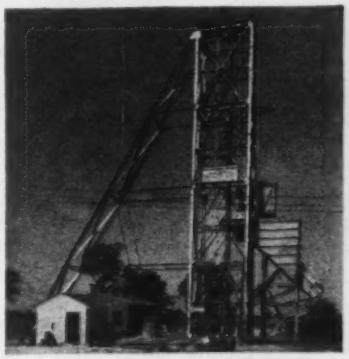

SAFE—DEPENDABLE MAYO ALL-STEEL HEADFRAMES

Because conditions vary so greatly from one mine or tunnel job to another, a careful analysis of your operation should be made before attempting the design or construction of a headframe. Our twenty-five years of expereince on important installations in America, Europe and South America is at your disposal!

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

R. I., East Greenwich—HIGH SCHOOL—BA 3/8—Town, School Dpt., Greenwich, 1 story brick high school, Cedar Ave. $800,000. Plans deposit $100. Harkness & Geddes, 126 Industrial Trust Bldg., Providence, archts. CD 1/21/53.

BUILDINGS

LOW BIDS AND CONTRACTS

Louis Prioa Constr. Co., Inc., 48 Silver Lake Ave., Newton, Mass. LB $323,580, elementary SCHOOL, off the Great Rd.;

Franchi Constr. Co., 815 Washington St., Newtonville, Mass. LB $229,750. GYMNASIUM, off Summer St.;

Horn Bros., Inc., 23 Miner St., Boston, Mass. LB $572,138, combined SCHOOL and GYMNASIUM, MAYNARD, MASS. Town, I. Mannin, chn. Bldg. Comn., Town Hall, Maynard, Mass. Bids Feb. 14. CD 1/21.

Whitten Brothers, 39 Holton St., Woburn, Mass. Owner Builds. $700,000. 60 RESIDENCES, off Russell St., WOBURN, MASS.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† N. Y., Newburgh — RUNWAY APPROACHES — BA 3/24—U. S. Eng., 111 E. 16 St., New York, Zone 3, runway approaches and aqueduct bridging, FY 54 and excess cut and fill, FY 55, Stewart Air Force Base. $1,000,000-$3,000,000. Frederick R. Harris, 27 William St., New York, Zone 5, engr. CD 11/12.

▲ New York—BA 4/15—Power Authority of The State of New York,. 270 Broadway, New York, Zone 27, constr. Barnhart Island Power Plant, near Massena, St. Lawrence Co., Spec. No. PA-5-11001, St. Lawrence Contr. No. 9. Plans deposit $50. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 2/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ PENNSYLVANIA—Pennsylania Turnpike Comn., 11 N. 4 St., Harrisburg,

J. Robert Bazley, Inc., Pottsville, Pa., CA $2,375,066. constr. 3.95 mi. (Sec. 37-A) Northeastern Exten. Penn Forest Twp., Carbon Co. Bids Feb. 1. CD 2/3, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

George W. Walker & Sons, Inc., 770 Elmwood Ave., Buffalo, N. Y, CA $785,600. 3 story, 53x200 ft. 82-bed, brick, steel HOSPITAL addn., air-conditioned, BUFFALO N. Y. Millard Fillmore Hospital, 875 Lafayette Ave., Buffalo, N. Y. F. J. & W. A. Kidd, 524 Franklin St., Buffalo, N. Y. archts. Awarded Feb. 15.

Kayfield Constr. Corp., 116-55 Queens Blvd., Forest Hills, N. Y. CA $500,000. 10 story OFFICE, 30-34 W. 47 St., NEW YORK, N. Y. Fifth Ave. Jewelers Exchange, 32-34 W. 47 St., New York 19, N. Y. CD 4/8.

▲ HRH Constr. Corp., 16 W. 46th St., New York 19, N. Y. CA $2,000,000. APARTMENT, York Ave. between 68 and 69 Sts., NEW YORK, N. Y. Society of the New York Hospital, 525 E. 68 St., New York 21, N. Y. CD 9/30.

E. Clifford Durell & Son, Inc., 1910 N. Marshall St., Phila. 22, Pa., CA Est. $500,000. HOTEL alterations, PHILA., PA. Walnut Park Plaza, c/o Ralph R. Lipschutz, 28 S. 18 St., Phila., Pa. Bids Feb. 1. CD 1/19.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Lee Constr. Co., 311 W. Worthington Ave., Charlotte, N. C., CA $1,776,923. sewage treatment plant, on Walnut Creek, RALEIGH, N. C. City, W. H. Caprer, city mng., City Hall, Raleigh, N. C. Bids Feb. 3, awarded Feb. 16. CD 2/8, under LB.

▲ LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

T. L. James & Co., Ruston, La. LB $1,809,674. surf. 4.927 mi. Proj. 283-09-03 and 714-01-81, Jefferson and Orleans Parishes. Bids Feb. 16. CD 2/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ A. R. Briggs Constr. Co., 526 Arch St., Macon, Ga., LB $1,435,900, Athens High and Industrial SCHOOL, Northside Elementary School, W. Broad St. Elementary SCHOOL addn., David Barrow Elementary SCHOOL addn., Childs St. Elementary SCHOOL addn., College Ave. Elementary SCHOOL addn., Oconee St. Elementary SCHOOL addn., New Athens High SCHOOL addn., ATHENS, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Feb. 8. CD 1/4.

▲ Georgia Southern Constr. Co., 300 Vineville Ave., Macon, Ga., LB $1,526,407, Brewton-Condor Elementary and High SCHOOL; Wilkes Elementary SCHOOL mechanical remodeling; Cadwell Elementary SCHOOL addn, Dexter Elementary SCHOOL addn., Consolidated Negro SCHOOL, (Millville Area) Negro SCHOOL (Flemington-Mary Grove Area); Consolidated Negro SCHOOL (Brewton Area), DUBLIN, Ga. State SCHOOL Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Feb. 10. CD 1/11.

A. B. Newton, Vidalia, Ga., LB, $589,900. Putnam County High SCHOOL addn. (White), Putnam County Elementary and High SCHOOL (Colored), Eatonton Elementary SCHOOL (White), EATONTON, GA. State School Bldg. Auth., 41 Exchange Pl. S. E., Atlanta, Ga. Bids Feb. 1. CD 1/4.

▲ Lamar Reddick, North Center St., Thomaston, Ga., LB, $1,074,890. Thomaston Training SCHOOL for Negroes addn., Lincoln Park Elementary SCHOOL for Negroes, Yatesville Elementary SCHOOL for Negroes, Fellowship Elementary SCHOOL for Negroes, addn. and mechanical remodeling to Yatesville Elementary and High SCHOOL addn. and mechanical remodeling James R. Atwater Elementary and Junior High SCHOOL addn. and mechanical remodeling John Thurston Elementary and Junior High SCHOOL addn. and mechanical remodeling John B. Gordon Elementary and Junior High SCHOOL addn., mechanical remodeling to Rock Hill Elementary and Junior High SCHOOL, THOMASTON, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Feb. 17. CD 1/11.

▲ Feldman Bldg. Corp., 605 Lincoln Rd., Miami Beach, Fla., LB, $1,408,748, HOTEL and CABANAS, MIAMI BEACH, FLA. Owner, c/o Carlos B. Scheeppl, 2701 Biscayne Blvd., Miami, Fla. Enos Schera & Louis H. V. Smith, 1660 N.W. 131 St., Miami, Fla., engrs.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Medinah—SCHOOL—BA 3/16—High School District No. 108, 345 Bloomingdale Rd., Itasca, Mediniah High School. $760,000. Bradley & Bradley, 226 S. Main St., Rockford, archts. CD 1/13.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Chicago Bridge & Iron Co., 1204 Lafayette Bldg., Detroit Mich. CA $582,500. furnishing, erecting two 1 M.G. elevated and one 10 m.g. steel tanks, ornamentaling the elevated tank at Webster Station site, PLEASANT RIDGE, MICH. Southeastern Oakland County Water Auth., 23646 Woodward Ave., Pleasant Ridge, Mich. CD 11/18

BUILDINGS

LOW BIDS AND CONTRACTS

Paugh & Brown, Inc., 6007 Euclid Ave., Cleveland 3, O., CA $505,061, est. $676,703, general contract 26 rooms, two kindergartens for new Fox Memorial SCHOOL, Fox Ave. and Babbitt Rd., EUCLID, O. City, Bd. Educ., 23131 Lake Shore Blvd., Euclid, O. Bids Jan. 27, Awarded Feb. 9. CD 1/11.

▲ J. L. Simmons Co., Inc., Inland Bldg., Indianapolis, Ind., LB $2,336,600. HOSPITAL addn. MUNCIE, IND. Ball Memorial Hospital, 240 University Ave., Muncie, Ind. Bids Feb. 15. CD 1/14.

▲ C. A. Hooper Co., 2026 Pennsylvania Ave., Hyland-Hall Co., 212 N. Bassett St., Pharo Heating Co., 1302 Regent St., all Madison, Wis., LB $870,000, heating, refrigeration and plumbing & drainage combination work;

Robert J. Nickles Inc., 303 S. Ingersoll St., Madison, Wis., LB $683,940, electrical work for CITY HALL-COURT HOUSE, MADISON, WIS. City, City Hall, and Dane Co., Court House, Madison, Wis. Bids Feb. 10. CD 12/29.

Siesel Constr. Co., 514 E. Ogden Ave., Milwaukee, Wis., CA $600,000-$700,000. 4 story NURSES HOME addn., MILWAUKEE, WIS. Columbia Hospital, 3321 N. Maryland Ave., Milwaukee, Wis. Bids Dec. 6. CD 11/16.

▲ The Austin Co., 227 Curtis Bldg., Detroit, Mich. CA Est. $1,000,000. 60,000 sq. ft. FACTORY addn., 20,000 sq. ft. OFFICE addn., BENTON HARBOR, MICH. Clark Equipment Co., George Spata, pres., Benton Harbor, Mich. CD 1/28.

▲ Commercial Contg. Co., 12160 Cloverdale St., Detroit 4, Mich. CA Est. $1,500,000. 2 story ADMINISTRATION BLDG. with 1 story wing, MILFORD, MICH. General Motors Corp., General Motors Bldg., Detroit, Mich. CD 9/16.

Fullerton Constr. Co., 19156 Filer St., Detroit, Mich. LB $759,685. HIGH SCHOOL, MOUNT CLEMENS, MICH. L'Anse Crause School Dist., 27733 S. River Rd., Mount Clemens, Mich. Bids Feb. 7. CD 1/14.

▲ Darin-Armstrong, Inc., 2041 Fenkel Ave., Detroit, Mich. CA $1,811,859. general contract;

Page Plumbing & Heating Co., 100 W. Pleasant St., River Rouge, Mich. CA $566,585. mechanical contract for Woodrow Wilson Junior High School, WYANDOTTE, MICH. City, Bd. Educ., Wyandotte, Mich. Bids Jan. 19. CD 12/27.

WEST OF MISSISSIPPI

SOON LETS CONTRACT—BUILDINGS

▲ Tex., Fort Worth—BUILDING ADDN—Continental National Bank, c/o George Thompson, Jr., pres., 812 Houston St., soon lets contract completion of bldg., addn. of 24-storys, aluminum exterior, concrete, steel frame, air-conditioning, elevators. $3,500,000. Plans deposit $15. Preston M. Geren, 1697 Fort Worth Natl. Bldg., archt. CD 3/9/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ American Bridge Co. Div. U. S. Steel Corp., Lydia St. and Missouri River, Kansas City, Mo. CA $2,649,950, est. $2,885,000. superstructure metal work and spans of Broadway Bridge located on U. S. Hy. 71 near Riverside, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Bids Feb. 15. CD 1/28.

▲† Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb. and Morrison-Knudsen Co., Inc., 319 Broadway, Ave., Boise, Idaho, LB $6,949,850, est. $7,666,195 spillway basin, Garrison Dam and Reservoir Proj., CIVENG-32-015-55-37, NORTH DAKOTA. U. S. Eng., Riverdale, N. D. Bids Feb. 15. CD 1/26.

KANSAS—Kansas Turnpike Auth., at office County Clerk, Emporia,

J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan CA $737,215. Contr. 5-17-E (1), grading 8.24 mi, Chase and Lyon Counties. Bids Feb. 10. CD 2/2.

KANSAS—Kansas Turnpike Auth., at office County Clerk, Sumner Co., Wellington,

E. W. Geiger, Inc., First and Topeka Sts., Topeka, Kan. CA $545,257. Contr. 1-1-E (1) grading approx. 8 mi., Sumner Co.;

T. F. Marbut, Columbia Bldg., Emporia, Kan. CA $385,510. Contr. 1-2-E (1) grading approx. 9.32 mi. Sumner Co. Bids Feb. 4. CD 1/25.

(Continued on page 62)

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FOR PROFITABLY DOING THE JOBS TOO BIG FOR A SMALL CRANE, TOO SMALL FOR THE BIG ONES

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- Power booster clutches for easiest operation
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- Large all-weather cab with ample headroom
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- Specially designed and BAY CITY built carrier with 182" wheelbase
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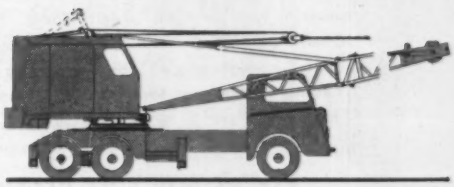
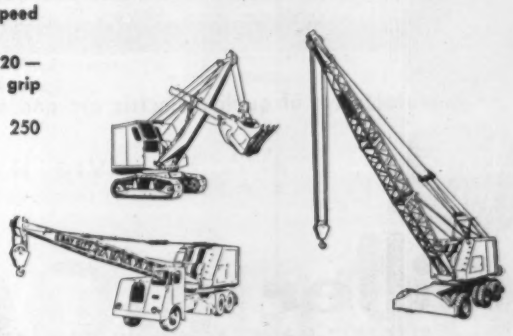
- Wide selection of speeds with 12 forward and 3 reverse — top road speed 44 M.P.H.
- Ample flotation with 10 — 10:00 x 20 — 12 ply heavy-duty mud and snow grip tires

250





BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

(Continued from page 60)

▲ **TEXAS**—Texas Turnpike Co., W. L. Pickens, Pres., 1408 Magnolia Blvd., Dallas,
Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. LB **$13,723,915**, Sect. 3; LB **$10,711,184**, Sect. 6;
H. B. Zachry Constr. Co., Box 2570, San Antonio, Tex. LB **$56,728,688**, Sects. 12, 45 and 7 for 223 mi. road from Fort Worth-Dallas-Houston. CD 2/7.

BUILDINGS
LOW BIDS AND CONTRACTS

Leroy Kindlesparger, Robert A. Riley & William C. Weinrich, 4903 Delmar Blvd., St. Louis 8, Mo. CA Est. **$750,000**. 76 RESIDENCES in Fifeshire Acres west side of Hutchinson Ave. west of Clarkson Rd., 2 blocks north of Manchester Rd., ST. LOUIS COUNTY, MO. Edward Nierman Jr., realtor, 12314 Manchester Rd., S.t Louis County, Mo.
Cadenehad & Rosser, 4771 Traillake Dr., Fort Worth, Tex., LB Est. **$500,000**. 1 story, brick, tile, concrete, 45,884 sq. ft. SHOPPING CENTER, 75-car parking area, 2500 W. Berry St., FORT WORTH, TEX. R. E. Cox & Co., 7th and Throckmorton St., Fort Worth, Tex. Curtis A. McClure, 2854½ W. Berry St., Fort Worth, Tex., archt. Richard R. Grimmer, W. T. Waggoner Bldg., Fort Worth, Tex., engr.
▲ **Jaffe & Martin**, 4623 Blanco Rd., San Antonio, Tex. CA **$1,008,510**, 48 DWELLINGS, 170-acre tract east of Fredericksburg Rd., SAN ANTONIO, TEX. V. F. Buchek & Assocs., 833 Bandera Rd., San Antonio, Tex. Hare & Hare, 114 W. 10 St., Kansas City, Mo., landscape archts. CD 9/8.

FAR WEST

BUILDINGS
LOW BIDS AND CONTRACTS

Gee Builders, 2116 N. Broadway, Los Angeles, **Calif.** CA **$960,000**. 96 frame, stucco DWELLINGS, Tract 1738, BAKERSFIELD, CALIF. Kerndale Homes & Kerndale Estates, c/o Absmeir & O'Leary, 1898 Crenshaw Blvd., Los Angeles, Calif., archts.
Ralmor Corp., 8293 Sunset Blvd., Los Angeles, Calif., CA **$650,000**. 50 frame, stucco DWELLINGS, Kildare and Lonersch Sts., LANCASTER, CALIF. Greendale Park, Inc., 8293 Sunset Blvd., Los Angeles, Calif.
G. E. Kinsey Operating Co., Inc., 3834 Wilshire Blvd., Los Angeles, Calif. Owner Builds. **$500,000**. 2 story, 150x150 ft., stucco STORE, LOS ANGELES, CALIF. Milton L. Anderson, 520 W. 7 St., Los Angeles, Calif., archt.
▲ **Guy E. Hall**, 310 30 St., Bakersfield, Calif., CA **$1,237,856**, constr. SCHOOL on Rte. 399, MARICOPA, CALIF. Maricopa Unified School Dist., Maricopa, Calif. Bids Feb. 18. CD 2/8.
▲ **Allison Honer Co.**, 312 N. Main St., Santa Ana, Calif., LB **$1,378,980**, JUNIOR HIGH SCHOOL, SANTA ANA, CALIF. Santa Ana School Dist., 1415 French St., Santa Ana, Calif. Bids Feb. 15.

CANADA

SOON LETS CONTRACT—BUILDINGS

▲ **Man., Winnipeg**—LABORATORY—BA 4/13—Dpt. P. Wks., Hunter Bldg., Ottawa, science service laboratory, $2,000,000. Plans deposit $500. E. A. Gardner, c/o owner, archt. CD 9/27.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Claydon Ct. Ltd.**, 290 Garry St., Winnipeg, Man. CA, **$2,000,000**. 3 story OFFICE, Portage Ave., WINNIPEG, MAN. Dayton's Ltd., Portage Ave., Winnipeg, Man. Bids Feb. 2, awarded Feb. 10. CD 1/21.
Reliance Constr. Co., 2205 Beaconsfield Ave., Montreal, Que. Owner Builds, **$500,000** HOUSING DEVELOPMENT Parthenias St., MONTREAL, QUE.
▲ **Westmount Gardens, Inc.**, Eugene Legace, 10 Rue Legace, Strathmore, Que., Owner Builds, **$1,800,000**. HOUSING DEVELOPMENT, on new streets in Beaconsfield suburb, MONTREAL, QUE.
Aldei Guevremont Co. Ltd., c/o 2775 Levesque Blvd., Montreal, Que., Owner Builds, **$800,000**. 13 unit HOUSING PROGRAM, Levesque Blvd. in St. Vincent de Paul suburb, MONTREAL, QUE.
▲ **Quebec Construction, Inc.**, E. Georges Legace, 10 Rue Lagace, Strathmore, Que., Owner Builds, **$1,300,000**. 100 bungalow HOUSING program, Oliva Asselin Blvd., VAL MARTIN, QUE.

AMERICANS ABROAD

BIDS ASKED—HEAVY CONSTRUCTION

Bids will be taken on the following project under International competitive bidding of NATO.

NORWAY

Forsvarets Anleggsdirektorat (FAD), Parkveien 68, Oslo. constr. radar station in rock chambers in Northern Norway beyond the Arctic Circle; 1,400-meter long shaft at an angle of 27 degrees elevation with a sect. of 6 sq. meters leading up to the top of a mountain a little more than 1,000 meters high; blasting 4,000 cu. meters for the main operation halls in the rock approx. 30 meters under the top of the mountain; constr. small rein.-con. bldgs. on top of the mountain; constr. rooms in the main operation halls. $980,000. Bidding will close April 15. For information on bidding NATO projects see 6/25 Construction Daily.

Proposed Projects

WATER SUPPLY

▲ **Okla., Duncan**—City, City Hall, water reservoir, pipe line and filter plant at Wildhorse Creek. **$1,250,000**. Hodgins, Thompson & Ball, 1100 W. Main St., Oklahoma City, Okla., consult. engrs. CD 11/25/52.
▲ **Tex., Amarillo**—City, V. N. Moss, mgr., City Hall, bond election Mar. 8, water imprvs., incl. 25 mi. 42 in. concrete supply pipe, high pressure pumping station and 10 water wells. **$6,000,000**. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 1/31.

BRIDGES

▲ **N. Y., Hicksville**—**Long Island R.R. Co., J. M.** Nicholson, ch. engr., Jamaica Station, Jamaica 35, N. Y., 7 bridges to eliminate grade crossings at Jerusalem Ave., Broadway, Old Country and Bethpage Rds., Marle, Nicholai and Barclay Sts. **$10,399,000**.

STREETS AND ROADS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Danvers—hy., Andover State Rte. 114, **$100,000**.
Dennis and Brewster—Mid-Cape Hy. Rte. 134, 6.857 mi. double barreled hy. with 100 ft. separation strip, 3 bridges, **$3,000,000**. CD 8/12/53.
▲ **NEW YORK**—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,
Bronx Co.—reconstr. Southern end of Bruckner Blvd. **$30,800,000**;
1.8 mi. Sheridan Expressway from Longfellow Ave. to Cross-Bronx Expressway, **$6,000,000**;
Sheridan Expressway Exten., **$11,000,000**.
Bruckner Expressway from Longfellow Ave. to Pelham Bay Park. **$24,500,000**.
▲ **O., Cincinnati**—City, City Hall, imprv. Corbley-Sutton Ave. from Beechmont to Glade Ave., Plan A to have 36 ft. roadway, **$400,000**; Plan B would have 36 ft. road within 80 ft. right of way, **$1,250,000**. T. J. Montgomery, city engr. CD 11/14/52.

EARTHWORK, WATERWAYS

▲ **Calif., Gilroy**—South Santa Clara Valley Water Conservation Dist., City Hall, earth fill dam, pipe line and access road, **$2,100,000**. Blackie & Wood, Flatiron Bldg., San Francisco, consult. engrs. CD 1/4.
▲ **O., Cincinnati**—City, City Hall, straightening, widening, deepening Mill Creek Channel between Clifton Ave. and Dane St. **$1,500,000**. T. J. Montgomery, city engr.

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AIRPORTS

▲† **Mont., Glasgow**—JET BASE—U. S. Eng., City-County Airport, Walla Walla, Wash., jet interceptor base, $9,000,000. Morrison & Mairle, Helena, consult. engrs. CD 12/13.

▲† **N. H., Portsmouth**—ROADS, PARKING AREAS, etc.—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., roads, parking areas, utilities, heat distr. sys., Portsmouth Air Force Base, ENG-19-016-55-90. $4,000,000-$5,000,000. Guy B. Panero, 420 Lexington Ave., New York, N. Y., and Whitman & Howard, 89 Broad St., Boston, Mass., consult. engrs. CD 7/20/53, under LB.

LATIN AMERICA

▲ **Mexico, Culiacan**—State Govt., Palacio del Estado, Culiacan, Sinaloa, Mexico, plans WW and sewerage. $1,760,000.

PUBLIC BUILDINGS

▲ **Calif., Lynwood**—SCHOOL—Lynwood Unified School Dist., Lynwood, $2,250,000. bond election May 20, schools. CD 1/23/51.

▲ **Calif., Sacramento**—SCHOOLS—Bd. Educ., Administration Bldg., Sacramento, voted $13,500,000 bonds, school expansion program. CD 10/21.

▲ **Calif., Santa Clara**—HIGH SCHOOL—Santa Clara School District, Santa Clara, $3,000,000 bond election May 24, high school. CD 3/13/52.

▲ **Conn., Hartford**—COUNTY—Comrs. Hartford County, County Bldg., 95 Washington St., county bldg. and 5,000 car parking space. $5,000,000.

▲ **Conn., Middletown**—CIVIC CENTER—City, Herbert C. F. Bell, vice chn. Bldg. Comn., plans by Seb J. Tassanesi, 164 Court St., civic center, municipal bldg., Washington and College Sts. to waterfront with provision for swimming pool, recreation hall and apartments, $2,000,000. CD 12/24/53.

▲ **Neb., Lincoln**—SCHOOL—Bd. Educ., 720 S. 22 St., voted $10,000,000 bonds Feb. 8, school constr. CD 11/1.

▲ **N. Y., Fresh Meadows**—HIGH SCHOOL—Bd. Educ., 42-15 Crescent St., Long sland City, Zone 1, Northeast Queens High School, 58 St. from 174 to 176 Sts. $5,500,000.

▲ **Alta., Calgary**—POST OFFICE—Federal P. Wks. Dpt. Ottawa, Ont., plans by Rule, Wynn & Rule, 513 8 Ave. W., post office, 9th Ave. West between 1 and 3 Sts. $5,000,000.

▲ **Que., Montreal**—GOVERNMENT—Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., plans by E. A. Gardner, ch. archt., c/o owner, federal government bldg., Dorchester and Bleury Sts., $2,000,000.

COMMERCIAL BUILDINGS

▲ **Calif., Canoga Park**—DWELLINGS—Kex Corp., 9700 W. Pico Blvd., Los Angeles, 192 dwellings, Mason Ave. $2,000,000.

▲ **Calif., Los Angeles**—DWELLINGS—Eland Corp., 9615 Van Nuys Blvd., 233 dwellings, Babbitt and Collins Aves., $2,630,000.

▲ **Calif., Los Angeles**—DWELLINGS—Roven Spiegel Co., Inc., 5658 W. 3 St., plans by Maxwell Starkman, 1022 S. La Cienega St., 289 frame dwellings in Van Nuys District, $2,500,000.

▲ **Calif., Redondo Beach**—SHOPPING CENTER—Brody Investment Co., c/o Jones & Emmons, archts., 8925 Beverly Blvd., Los Angeles, South Bay Shopping Center, $3,000,000.

▲ **O., Cincinnati**—HOMES—Arcose Co., 4997 Glenway Ave., 275 homes, Delhi and Anderson Ferry Rd. $5,000,000. Joseph Allen, 4637 Glenway Ave., consult. engr.

▲ **Pa., Pittsburgh**—OFFICE—Peoples First Natl. Bank & Trust Co., 5 and Wood Sts., plans by Altenhof & Bown, 1230 Park Bldg., 14 or 15 story steel frame banking office headquarters bldg. $5,000,000.

INDUSTRIAL BUILDINGS

▲ **Kan., Topeka** — TRUCK TERMINAL, etc. — Topeka Truck Sales, R. C. Carr, mgr., 418 Quincy St., truck terminal and service center, Rock Island R.R. and Hy. 24. $3,000,000. Capital Eng. Co., 29 and Topeka Ave., consult. engrs. CD 3/12.

▲ **Mich., Sterling**—PLANT—Ford Motor Co., 3000 Schaefer St., Dearborn, plans by Albert Kahn Associated Architects & Engineers, Inc., engr.-archt., 345 New Center Bldg., Detroit, chassis parts plant, 1.3 million sq. ft. floor space, 17 Mile Rd. and Mound Rd., $25,000,000.

▲ **Mo., St. Louis**—GENERATING PLANT—Union Electric Co. of Missouri, 315 N. 12 Blvd., Zone 1, 3rd section, rein.-con., steel steam power generating plant (Meramec Plant) will house 250,000 kilowatts turbo-generator, near jct. of Mississippi and Meramec Rivers at southeastern end of St. Louis County, $35,000,000. CD 12/27.

▲ **N. Y., Peekskill**—ATOMIC POWER PLANT—Consolidated Edison Co. of New York, Inc., 4 Irving Pl., New York, atomic electric power plant, at Indian Point, near here. $30,000,000-$40,000,000.

▲ **Pa., Pittsburgh**—PLANT—Reick Dairy Co., 1345 Forbes St. plans by Hunting, Larsen & Dunnells, Inc., Century Bldg. dairy plant, Forrest Rd., Scott Twp. $2,500,000.

▲ **Tex., Houston**—REFORMING UNIT, etc.—Sinclair Refining Co., Gulf Bldg., constr. 24,000-bbl. catalytic reforming unit, $15,000,000; some crude pipe line work in vicinity of plant, $100,000; warehousing and storage, $300,000, near Ship Channel. CD 7/15/52.

▲ **Ont., Fort Frances**—MILL—Ontario-Minnesota Pulp & Paper Co., Ltd., Fort Frances reconstr. steel, concrete grinder room of paper mill $2,000,000. CD 11/27/50.

UNCLASSIFIED

▲ **Kentucky**—RURAL DISTRIBUTION LINES, etc.—Jackson County Rural Electric Co-operative Corp., McKee, 196 mi. rural distr. lines, substation, facilities, sys. imprvs., Jackson Co. $1,225,000. CD 10/8/52.

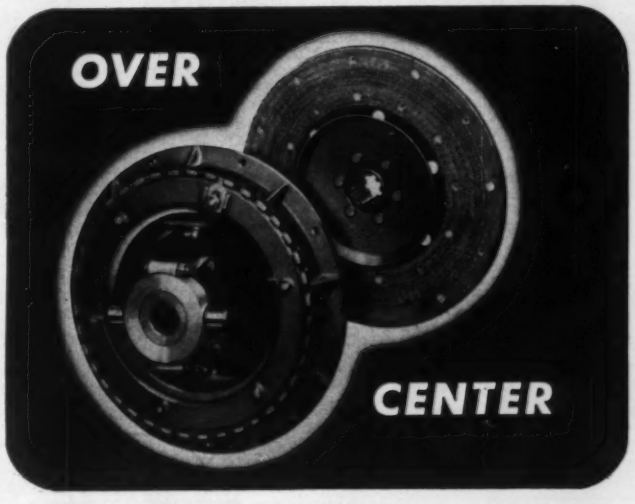
▲ **Mass., Boston**—OFF STREET PARKING—City, Real Estate Comn., City Hall Annex, plans by M. A. Dyer Co., 24 School St., Boston, off street parking facility Washington, Dore and Dillaway Sts. $1,300,000.

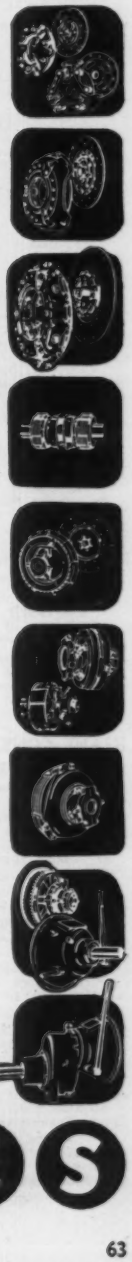
▲ † **New York**—AAA FACILITIES—U. S. Eng., 111 E. 16 St., New York, Zone 3
AAA FACILITIES FY 55
Hamburg, $1,000,000-$3,000,000.
Orchard Park, $1,000,000-$3,000,000, Brown, Guenther & Booss, 1860 Broadway, New York, Zone 23, archts.
Amityville, $500,000-$1,000,000.
Lloyd Harbor, $500,000-$1,000,000, Alexander D. Crossett, 27 William St., New York, Zone 5, archt.
Cambria, $500,000-$1,000,000.
Mill Grove, $500,000-$1,000,000.
Millersport, $500,000-$1,000,000, Greenberg & Ames, 303 Fourth Ave., New York, Zone 10, archts.
Spring Valley, $500,000-$1,000,000, Raymond & Rado, 101 Park Ave., New York, Zone 17, archts.
Lido Beach, $500,000-$1,000,000.
Orangeburg, $500,000-$1,000,000.
Ramsey, $500,000-$1,000,000, Leonard S. Wegman, 70 E. 45 St., New York, Zone 17, archt.

▲ **R. I., Providence**—AAA FACILITIES—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., special AAA facilities, 8 sites, 4 batteries, Coventry, North Kingston, North Smithfield, Foster and Bristol-Rehobeth. $2,500,000-$3,000,000 Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., consult. engrs. CD 11/15.

▲ **Ontario**—RAILWAY—Canadian National Rys., R. A. Emerson, ch. engr., Montreal 3, Que. relocation of C.N.R. line serving area between Cornwall Junction to Cardinal, 5,000 ft. north of present tracks, $20,000,000.

ROCKFORD





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CLUTCHES

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 21 Connecticut
STREETS AND ROADS
March 10 Massachusetts

▲† **Maine**—BA 3/23—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., dredging Portland Harbor deepening anchorage to 35 ft., Portland, CIVENG-19-016-55-26, $1,000,000. Extended date. CD 2/1.

▲ **MASSACHUSETTS**—BA 3/23—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Ludlow, Wilbraham and Palmer—Contr. 51-191 hy. and bridge constr. $2,000,000. Plans deposit $10. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/11.

▲ **MASSACHUSETTS**—BA 3/31—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
West Stockbridge, Stockbridge and Lee—Contr. 51-010 hy. and bridge constr. $3,000,000. Plans deposit $10. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston,
Munroe-Langstroth, Inc., Norwood, Mass. LB **$1,721,-122.** No. 880 Bridge over Malden River & B. & M. R.R., Medford and Everett. Bids Feb. 17. CD 2/1.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Elmhurst Constr. Co., Inc., 53-09 97 Place, Corona, L. I., N. Y. LB **$2,571,415**, est. $2,500,000. Contr. 51-020 hy. and bridge constr., Becket and Otis. Bids Feb. 16. CD 1/18.

† **Wexler Constr. Co.**, 118 Needham St., Newton Highlands, Mass. LB **$871,887** base bid **$904,387** alt. bid, est. $1,000,000-$1,250,000. roads and utilities Otis Air Force Base, ENG-19-016-55-75, FALMOUTH, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 16. CD 2/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Martin Cerel**, 18 E. Central St., Natick, Mass. Owner Builds. **$5,000,000.** RESIDENTIAL DEVELOPMENT, 5 different sections, FRAMINGHAM, MASS.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† **N. Y., Newburgh**—BRIDGING—BA About 3/24—U. S. Eng., 111 E. 16 St., New York Zone 3, Catskill aqueduct bridging and clear, approach zone and taxiway paving and lighting, Stewart Air Force Base, Serial No. ENG-30-075-55-83. $1,500,000-$2,000,000. CD 9/28, under LB.

BIDS ASKED—BUILDINGS

▲ **Pa., Hollidaysburg**—SCHOOL—BA 3/15—Hollidaysburg Community High School Auth., Hollidaysburg, 1 story, steel, brick, block Junior High School addn., alterations. $2,000,000. Plans deposit $50. Hunter Caldwell & Campbell, 3601 5 Ave., Altoona, archts.

▲ **Pa., Erie**—HIGH SCHOOL—BA 3/23—School Dist. of Erie, South Park Row and French St., 2 story brick, block, steel Junior High School. $3,000,000. Plans deposit $30. Gifford & Sunda, 119 W. 8th St., archts. CD 8/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **General Railway Signal Co.**, 230 Park Ave., New York 17, N. Y., CA **$7,192,238**, furnishing, installing block signaling and interlocking equipment for Liberty Avenue Line, Euclid Ave. and Pitkin Ave. Yard to Lefferson Ave. and the Rockaway Line, Liberty Ave. to south of North Channel Drawbridge, Brooklyn and Queens Boros, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Feb. 4. CD 2/10 under LB.

▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York 17, N. Y., CA, **$2,824,000** superstructure for new Hangar No. 9 at New York International Airport, to be used by Eastern Airlines, IDLEWILD, N. Y. Port of New York Auth., 111 85 Ave., New York 11, N. Y. CD 1/18/54.

▲ **J. Rich Steers Co.**, 17 Battery Pl., New York 4, N. Y. LB, **$5,376,375**, constr. Pier A, Hoboken-Port Authority Piers, H.P. 120.006, HOBOKEN, N. J. The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Feb. 21. CD 1/19.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Cayuga Foundation Co., 30 Vesey St., New York, N. Y. CA, **$1,862,975**, Contract No. 10-A, concrete deck for Newark Bay Bridge on Newark Bay-Hudson County Exten. of N. J. Turnpike, for east abutment to Bayonne to Doremus Ave. in Newark, Hudson and Essex Counties. Bids eb. 3. CD 2/8, under LB.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
American Bridge Co., 71 Broadway, New York, N. Y. CA, **$2,139,800**, Contract N-27B, fabrication, erection superstructure steelwork for Section B of North Terminal Ramps on Newark Bay-Hudson Co. Exten. of N. J. Turnpike, Jersey City, Hudson Co. Bids Feb. 8 SD 2/77, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Lipsett, Inc., 210 S. 40th St., Phila., Pa., LB **$4,490,743**, constr. T. J. Evans Tunnel (Sec. 36-DE), on Northeastern Exten., Lehigh and Carbon Counties. Bids Feb. 23. CD 1/28.
Ben Constr. Co., 101 Hargrove St., Pittsburgh, Pa., LB **$829,924**, sewage collection sys.;
Stoffiet Constr. Co., 2043 Eastburn Ave., Phila., Pa., LB **$521,887**, general construction sewage treatment plant, CATASAUQUA, PA. Boro Town Hall, Catasauqua, Pa. Bids Feb. 10. CD 1/26.

BUILDINGS

LOW BIDS AND CONTRACTS

1523-37 Second Ave. Corp., J. W. Schenker, pres., 16 W. 46 St., New York 19, N. Y. Owner Builds. **$1,500,000.** 18 story APARTMENT, west side Second Ave. between 79 and 80 Sts., NEW YORK, N. Y. CD 1/26.

▲ **Westhampton Grove Homes**, c/o E. Raynor's Sons, Library Ave., Westhampton Beach, N. Y. Owner Builds. **$3,000,000.** 200 HOUSES, Mill and Oneck Rds., WESTHAMPTON, N. Y.

▲ **Syndicate**, c/o Nassau Homes Sales Agency, Inc., 1 North Merrick Ave., Merrick, N. Y. Owner Builds, **$2,400,000**, 97 HOUSES on 28-acre tract on Peninsular Blvd. and Church Ave., WOODMERE, N. Y.

▲ **Gamble & Gamble**, Bolivar, Pa., CA **$1,583,000.** 2 story U-shaped, brick, block, steel Senior HIGH SCHOOL, Hempfield Twp., GREENSBURG, PA. Hempfield Twp. Area Joint School Dist., R. D. 6, Greensburg, Pa. Bids Jan. 19. CD 1/27, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲† **La., Lake Charles**—RUNWAY AND TAXIWAY, etc.—BA 3/23—U. S. Eng., P. O. Box 1229, Galveston, Tex., runway and taxiway exten., warm-up apron, shoulder stabilization and lighting, Lake Charles Air Force Base, ENG-41-243-55-45. $1,000,000-$3,000,-000. CD 8/19.

▲† **Tenn., Tullahoma**—SUPERSONIC CIRCUIT—BA 5/5—U. S. Eng., Tullahoma, supersonic circuit of propulsion wind tunnel, for testing full-scale engines and aircraft components at speeds ranging up to 3500 m.p.h., Arnold Engineering Development Center. $27,000,000. Sverdrup & Parcel, 20 and Nash Sts., St. Louis, Mo. archts. CD 11/16.

BIDS ASKED—BUILDINGS

▲ **Ky., Louisville**—OFFICE—BA 3/15—Southern Bell Telephone & Telegraph Co., Sixth and Chestnut Sts., 5 story office addn. $1,500,000. Wagner & Potts, Fincastle Bldg., archts.

▲ **Va., Richmond**—OFFICE—BA 3/28—Commonwealth of Virginia, State Finance Bldg., 15 story, bsmnt., sub-bsmnt., concrete state office, $4,000,000. Plans deposit $75, Merrill C. Lee, 601 E. Franklin St. and Marcellus Wright & Son, 100 E. Main St., archts. McFarlane & Sadler, 300 E. Main St., engrs. CD 9/20.

SOON LETS CONTRACT—BUILDINGS

▲ **Va., Arlington**—MOTEL—Hot Shoppes, Inc., 4115 Kansas Ave. N. W. Wash., D. C., soon lets contract, five motel-type bldgs., 7½-acre tract, south side 14th St. Bridge, near 14th St. Bridge Hot Shoppe. $3,000,-000. Extended date. Beall & LeMay, 1726 M St. N. W., Wash. D. C., engrs. CD 1/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Five Boro Constr. Corp.**, 2 Lafayette St. New York 7, N. Y., LB **$1,418,492**, est. $1,621,367, hospital FY-55, Homestead Air Force Base, HOMESTEAD, FLA. U. S. Eng., P. O. Box 4970 Jacksonville, Fla. Bids Feb. 9. CD 1/4.

▲ † **Wood Constr. Co.**, Quitman, Miss., CA, **$1,540,000** warehouse, roads and utility system, Brookley Air Force Base, MOBILE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Jan. 27. CD 1/28, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Richardson Constr. Co.**, 645 N. W. Seventh Ave., Fort Lauderdale, Fla., CA, **$4,182,000.** South Florida MENTAL HOSPITAL, FORT LAUDERDALE, FLA. Bd. Comrs. State Institutions, Caldwell Bldg., Tallahassee, Fla. Bids Jan. 27. CD. 9/22/53.

▲ **Taylor Constr. Co.**, 2875 North Le Jeune Rd., Miami, Fla., CA, **$3,500,000**, 14 story 230x345 ft., rein.-con. Beau Rivage HOTEL, 79 cabanas, pool, MIAMI BEACH, FLA. 4525 Collins Ave. Corp., 1 Lincoln Rd., Miami Beach, Fla. Morris Lapidus, 528 Lincoln Rd., Miami Beach, Fla., archt. Riley & Ross, 3047 Biscayne Blvd., Miami, Fla., struc. engr. Sasnett Engineers, 8340 N.E. 2 Ave., Miami, Fla., mech. engrs. Awarded Feb. 16.

▲ **Brown & Olds Co.**, Box 5450, Dallas, Tex. LB **$1,119,500.** plumbing, heating, ventilating contracts for Schumpert HOSPITAL, SHREVEPORT, LA. Sisters of Charity, of the Incarnate Word, 641 Margaret Place, Shreveport, La. Bids Feb. 16. CD 1/31.

▲ **Farnsworth & Chambers Co.**, 3018 Leland St., Houston, Tex. LB **$5,421,000**, est. $5,000,000. 9 story, bamnt., brick, masonry steel Schumpert HOSPITAL, Margaret Place and Warrington Place, SHREVEPORT, LA. Sisters of Charity of Incarnate Word, 941 Margaret Place, Shreveport, La. Bids Feb. 16. CD 1/31.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 29 Ohio
STREETS AND ROADS
March 8 Wisconsin — March 29 Ohio

BIDS ASKED—BUILDINGS

▲ **Wis., Winnebago**—FOOD SERVICE, etc.—BA 3/18—State Dpt. P. Welfare, Madison, food service and laundry bldg. $1,400,000. Plans deposit $50. Roger C. Kirchoff, state archt. CD 10/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Republic Steel Corp.**, Republic Bldg., Cleveland, O. CA Est. **$4,500,000**, pipe for 112 mi. 30 in. pipe line from Panhandle Transmission Pipeline Co. lines at Maumee to Richfield, OHIO. East Ohio Gas Co., 1405 E. 6 St., Cleveland, O. CD 10/10/52.

▲ **Michael Pontarelli**, 4248 N. Kilpatrick St., Chicago, Ill., LB, **$1,560,088.** Roscoe St. sewer project, auxiliary sewer in Roscoe St., Lowell to Long to Belmont, Lamon, Addison and Lockwood Sts., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Feb. 16. CD 2/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Vincent Kroeger**, 3730 Felkdamp St., Cincinnati, O. Owner Builds. **$4,000,000.** one hundred and twelve 1 story, bsmnt. HOMES, Nebb Rd. and Cleves-Warsaw Pk., CINCINNATI, O. Charles Bonfield, 4953 Shirley Pl., Cincinnati, O., engr. Awarded Feb. 17.

▲ **Charles H. Shook Co.**, 582 W. 2 St., Dayton, O., CA **$2,000,000.** 6 story ENGINEERING and RESEARCH BLDG. with office and laboratory space, west side of S. Main St., DAYTON, O. National Cash Register Co., S. Main and K Sts., Dayton, O. CD 1/6.

▲ **Fred L. Clark**, Xenia, O. Owner Builds. **$2,000,000.** 260 pre-fab. HOMES in north end of city, XENIA, O.

▲ **Ray C. Stotts**, 135 E. 2 St., Dayton, O. Owner Builds. **$1,350,000.** 87 HOMES on 44 acres, off 1100 block of North Detroit Ave., XENIA, O.

▲ **J. L. Simmons Co., Inc.**, Inland Bldg., Indianapolis, Ind., CA, **$2,336,600.** HOSPITAL addn., MUNCIE, IND. Ball Memorial Hospital, 240 University Ave., Muncie, Ind. Bids Feb. 15. CD 2/21, under LB.

▲ **Wm. R. Goss**, 8316 S. Ellis St., Chicago, Ill., LB, **$1,700,110**, CONVENT and ACADEMY, JOLIET, ILL. Sisters of St. Francis Convent, 373 Western Ave., Joliet, Ill. Bids Feb. 15. CD 2/8.

▲ **Dato & Co.**, Lake Zurich, Ill. Own Forces. **$6,000,-000.** 500 HOMES, water lines and sewers, LAKE ZURICH, ILL.

▲ **Christman Co.**, 408 Kalamazoo Bldg., Lansing, Mich. CA **$5,051,500.** 3 men's DORMITORIES, EAST LANSING, MICH. State, A. N. Languis, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Bids Feb. 9, awarded Feb. 18. CD 2/17, under LB.

▲ **Shelden Land Co.**, 32121 Plymouth Rd., Plymouth, Mich. Owner Builds. **$3,400,000.** 270 brick HOMES, Plymouth and Loveland St. section, LIVONIA, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 8 Iowa — March 10 Kansas
STREETS AND ROADS
March 8 Iowa — March 10 Kansas
March 11 Minnesota

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MISSOURI**—State Hy. Comn., Jefferson City,
Kansas City Bridge Co., 928 Broadway, Kansas City, Mo. CA **$2,020,368.** river piers for Missouri River Bridge, St. Louis and St. Charles Counties. CD 2/1, under LB.

▲ **Dickman-Pickens-Boyd Co.**, Manhattan Bldg., Muskogee, Okla. CA **$1,210,910**, est. $1,225,000. 104-room lodge and cabins, Sequoyah Park, Fort Gibson Lake, Wagoner Co., OKLAHOMA. Planning & Resources Bd., Capitol Bldg., Oklahoma City, Okla. Bids Feb. 11. CD 2/16, under LB.

P & L Equipment Co., Box 13007, Houston, Tex., LB $961,461, Elevated Roadway No. 2 on Crawford-Elysian St. connection, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids Feb. 9. CD 2/2.

▲ **TEXAS**—Sam Houston Toll Road Corp., c/o John B. Mills, c/o Mercantile Securities Bldg., Dallas, **Tecon Corp.**, 1201 Main St., Dallas, Tex., LB Est. $46,000,000. 86-mile section Dallas to Waco Leg of the Dallas to San Antonio Turnpike Toll Road. CD 2/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Cedarloo Park Co.**, P.O. Box 275, Waterloo, Ia., Own Forces, $3,000,000 SHOPPING CENTER, CEDAR FALLS, IA. (Correction—location and owner's address). CD 1/27, under CA, Ia., Cedar Rapids.

▲ **Leon & Harry Jacobs**, 6314 Brookside Plaza, Kansas City, Mo. Owner Builds. $1,250,000. SHOPPING CENTER, RAYTOWN, MO. CD 2/15.

Rockbrook Heights Corp., 8115 Leavenworth St., Omaha, Neb. Owner Builds. $2,000,000. 27 FOUR DUPLEXES, 43 DUPLEXES, SHOPPING CENTER, 108 and Center Sts., OMAHA, NEB.

▲ **Winn-Senter Constr. Co.**, 430 Railway Exchange Bldg., Kansas City, Mo CA Est. $2,500,000. MEAT WAREHOUSE, PERISHABE GOODS WAREHOUSE, etc., Proj. 10,026 distribution center, KANSAS CITY, KAN. Safeway Stores Inc., M. V. Witbuck, div. mgr., 306 E. 712 St., Kansas City 6, Mo. Bids Jan. 6. CD 12/21.

▲ **Geo. W. Greenwood, W. L. Hamilton & G. R. Van Arsdale**, 509 Kansas Ave., Topeka, Kan. Owner Builds. $2,000,000. SHOPPING CENTER Gage and Huntoon Sts., TOPEKA, KAN. Griest & Ekdahl, New England Bldg., Topeka, Kan., archts.

▲ **Marshall Constr. Co.**, 4009 Center St., Houston, Tex. LB $1,245,000, est. $1,000,000. 80,000 combined sq. ft., incl. four bldg. units, stadium and track, steel frame, brick HIGH SCHOOL, between League City-Kemah, LEAGUE CITY, TEX. Clear Creek Consolidated Independent School Dist., League City, Tex. Bids Feb. 16. CD 1/19.

▲† **Farnsworth & Chambers Co. Inc.**, Box 74, Houston, Tex., LB $1,305,197, Group 17 HOUSING, incl. 92 single units in eastern area of Los Alamos Townsite, Inv. No. 291-55-4, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Procurement Sec. Los Alamos, N. M. Bids Feb. 10. CD 1/21.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Calif., Muroc**—TEST FACILITY—BA 3/23—U. S. Eng., 751 S. Figueroa St., Los Angeles, Test Facility A-1, Edwards Air Force Base, ENG-04-353-55-72, $3,000,000. CD 9/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Sather & Son**, Yardley, Wash., CA $1,300,000. bridge over Clark Fork River, SANDPOINT, IDAHO. Northern Pacific Ry., H. R. Peterson, ch. engr., 176 E. 5 St., St. Paul 1, Minn. CD 11/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Foley Bros., Inc.**, First Security Bank Bldg., Salt Lake City, Utah, CA Est. $6,000,000. 1,500-ton a day uranium MILL, MOAB, UTAH. Uranium Reduction Co., Felt Bldg., Salt Lake City, Utah. CD 4/19, under CA.

▲† **H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland, O. CA Est. $1,000,000. uranium ore processing MILL, addn., MONTICELLO, UTAH. Atomic Energy Comn., Sheldon P. Wimpfen, mgr., Grand Junction, Colo. CD 5/20.

▲ **Witt Constr. Co.**, 1487 S. State St., Provo, Utah. LB $1,839,200. HIGH SCHOOL, OREM, UTAH. Alpine School Dist. Bd. Educ., Clarence D. Ashton, American Fork, Utah. Bids Feb. 15. CD 2/3.

▲† **J. W. Bateson, Inc.**, Gibraltar Life Bldg., Dallas, Tex., CA, $8,245,622, est. $8,270,091, 117 two story brick, frame permanent HOUSING bldgs., with streets and utilities Inv. 55-93, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 1. CD 2/4, under LB.

▲ **Bechtel Corp**, 220 Bush St., San Francisco, Calif., CA, $3,000,000, MARKETING TERMINAL, 14-acre site adjacent to Rosecrans Terminal, LOS ANGELES, CALIF. Union Oil Co. of California, 617 W. 7 St. Los Angeles, Calif. The H. K. Ferguson Co., 411 W. 5 St., Los Angeles, Calif., engr.-archt.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Quebec**—BA 3/14—St. Lawrence Seaway Auth., No. 2, Temporary Bldg., Ottawa, Ont., dredging near Montreal on 4 contracts on Lake St. Louis Channel, Lake St. Francis, Lancaster Bar, Lake St. Francis approach to Beauharnois Canal, Lake St. Francis Fraser Point to Cornwall. Plans deposit $75 each project. CD 9/9, under Ontario-Quebec.

BIDS ASKED—BUILDINGS

▲ **Alta., Edmonton**—SCHOOL FOR DEAF—BA 3/25—Dpt. P. Wks., Parliament Bldgs., School for Deaf, University Farm, $1,250,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Gilpin Constr. Co. Ltd.**, 110 W. Pender St., Vancouver, B. C., LB, $3,477,054, 6,600 ft. continuous plate bridge, rein.-con. approaches high level bridge from south foot of Oak St. to Lulu Island, Vancouver;

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Anglin-Norcross Quebec Ltd.**, 892 Sherbrooke St. W., Montreal, Que., CA, $1,500,000, East Wing of the Dorchester TOWER BLDG., Dorchester St. W. and Beaver Hall Hill, MONTREAL, QUE. Dorchester Tower Corp., 1390 Sherbrooke St. W., Montreal, Que. Bids Jan. 31. CD 1/19.

▲ **Riverview Investment Corp.**, 192 Levesque Blvd., Pont Viau, Montreal, Que. Owner Builds, $6,600,000, 600 bungalow HOUSING DEVELOPMENT, in Pont Viau Area, MONTREAL, QUE.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Alaska, Galena**—BULK FUEL SYS., etc.—BA 3/17—U. S. Eng., 4735 E. Marginal Way, Seattle, Wash., bulk fuel dispensing sys., buildings, utilities, roads, grading, constr. alert hangar, bulk storage warehouse, bachelor officers' quarters, two airmens dormitories, mess hall, truck fill stand, POL pump house, fuel storage tanks, maintenance hangar rehabilitation, heating and power plant addn., water treatment and storage plant, electrical distr., fuel pipe lines, underground piping, and conduits, etc. Inv. 55-46. Extended date. CD 2/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Department of the Air Force**, Pentagon Wash., D. C. for "Dew Line" a radar warning system from Alaska across upper part of Canada to **Western Electric Co., Inc.**, 195 Broadway, New York 7, N. Y. ALASKA-CANADA. Est. cost $1,000,000,000. The western segment will be constructed by

Puget Sound Bridge & Dredging Co., 2929 16 St., Seattle 4, Wash. and

Johnson, Drake & Piper, Inc., 9009 San Leandro St., Oakland 3, Calif.;

middle segment to

Northern Construction Co. & J. W. Stewart Co. Ltd., 1304 Hornby St., Vancouver, B. C.; and eastern segment to

Foundation Co. of Canada Ltd., 1900 Sherbrooke St., Montreal, Que. CD 12/8/54, under Canada.

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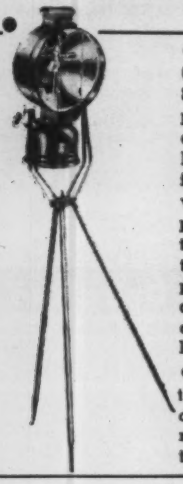

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UNIT PRICES

Earthwork Prices Take Wyoming Laterals Job

Sharrock & Pursel bid lowest on the West side laterals for Bureau of Reclamation's Eden project near Farson, Sweetwater County, Wyo. Construction Engineer is Palmer B. DeLong. Contract includes 11.2 mi of 14- to 3-ft bottom-width earth lateral, 3.4 mi of 6- to 3-ft bottom-width sublaterals, 0.7 mi of drain and wasteway channels, and structures.

Contractor has 480 days to complete work with liquidated damages set at $75 per day. Approved minimum wage rates at bid time were: laborers $1.60, pipe layers $1.75, shovel operators, all attachments, $2.45 for ¾ yd and smaller, $2.60 for ¾ to 3½ yds.

1C	Sharrock & Pursel, Casper, Wyo	$243,786
2	Asbell Brothers Const. Co., Riverton, Wyo.	258,050
7	Platte Valley Const. Co., Grand Island, Neb.	397,563
EE	Bureau of Reclamation, Denver, Colo.	261,590

Bids: 8-26-54 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, lateral & sublaterals	cy	220,000	$0.21	$0.24
structures	cy	18,000	0.75	1.50
Compacting embankments	cy	80,000	0.15	0.25
Overhaul	micy	18,000	0.20	0.25
Backfill, structures	cy	14,500	0.30	0.40
Compacting backfill	cy	4,800	2.50	3.00
Riprap, sand & grav bed	cy	525	10.00	9.00
Riprap	cy	1,000	12.00	9.00
Concrete, structures	cy	690	75.00	70.00
Cement, f&h	bbl	1,035	7.50	7.75
Reinforcing bars, f&p	lb	65,100	0.16	0.112
Elastic filler matl in joints, f&p, ½"	sf	42	1.00	1.50
1"	sf	24	1.50	3.00
Rubber waterstops, pl in jts, 6"	lf	70	1.00	1.50
9"	lf	16	1.50	2.00
Conc culv P std str, type B jts, f&lay 18"	lf	1,050	5.00	5.00
24"	lf	690	7.00	7.50
30"	lf	250	10.00	10.00
42"	lf	40	18.00	18.50
48"	lf	110	20.00	20.00
Conc pres P, HC50, type R jts, f&lay, 36"	lf	170	26.00	19.00
42"	lf	160	30.00	23.00
48"	lf	640	37.00	29.00
Precast conc P, fabr bends in 18", bends	ea	14	50.00	40.00
24", bends	ea	11	60.00	50.00
30", bends	ea	3	75.00	75.00
36", bends	ea	3	150.00	100.00
42", bends	ea	3	200.00	125.00
48", bends	ea	5	300.00	150.00
Timber structs, f&erect	Mfbm	12	255.00	300.00
Fence prot, f&erect	lf	220	3.00	1.00
Safety net, f&erect	ls	1	200.00	200.00
Slide gates, CI, f&i: twenty-six 18" ϕ	ls	.....	2,000	2,123
five 24" ϕ	ls	.....	650.00	535.00
two 36" ϕ	ls	.....	600.00	475.00
stl, f&i, 36"x24"	ls	1	200.00	100.00
Blow-off vlv, pipe, conn for siphon, f&i	lb	1,700	1.00	0.27
Misc. metalwork, f&i	lb	6,360	0.50	0.65

Concrete Bids Swing Nevada Airbase Runway

Primary runway extension at Indian Springs Air Force Base, Nevada, required portland cement concrete pavement 150 by 1,000 ft, 11-in. thick. Los Angeles District, Corps of Engineers, let contract to Gibbons & Reed Co. Wage rates prevailing were: operating engineers $2.78 per hr, skilled labor $2.92, semi-skilled $2.34, common $2.15. Work started Oct. 12, 1954, was mostly completed by Jan. 1, 1955.

1C	Gibbons & Reed Co., Salt Lake City, Utah	$297,944*
2	Wells Cargo, Inc., Las Vegas, Nevada	336,038*
3	Thorn Const. Co., Inc., Springville, Utah	380,675*
EE	Corps of Engineers, Los Angeles, Calif	276,998*

Bids: 9-30-54 Items	Unit	Quantity	Unit Prices 1C	2
Primary runway extension:			**$265,416**	**$295,912**
Excavation, common	cy	27,800	0.82	0.93
drainage	cy	26,000	0.36	0.82
Base crse, select matl	cy	800	1.15	4.75
Liq asph prime coat MC-2	t	9	41.50	55.00
Bituminous surface crse	t	500	12.00	12.00
Asph cement surface crse	t	30	39.50	35.00
Portland cmt conc pvmt	cy	5,300	18.37	20.00
cement	bbl	7,900	5.42	4.58
Runway & blast pad striping & marking	ls	1	4,466	1,300
Dust & erosion control	sy	190,000	0.05	0.03
Fence, rem, salvg, reset	lf	2,400	0.34	0.14
new	lf	4,600	0.45	0.50
Drop inlet # 1	ls	1	1,925	3,400
2	ls	1	1,200	3,900
3	ls	1	1,200	3,900
Headwall # 1	ls	1	1,825	3,400
Reinf conc P, 42" 1750 D	lf	1,150	18.50	25.00
42" 2000 D	lf	400	19.85	25.00
39" 1750 D	lf	450	15.15	22.00
Elec work, control vault	ls	1	1,090	1,100
Cable lead, 5 kv, instll direct burial, 600'	ea	6	335.00	200.00
in duct, 600'	ea	4	146.00	35.00
3'	ea	4	6.40	3.00
20'	ea	16	8.95	5.00
103'	ea	4	24.50	6.00
205'	ea	12	45.50	8.50
Conc base for threshold light w/handhole, rwy: high intens elevated	ea	20	215.00	160.00
med intens semiflush	ea	9	215.00	190.00
Concrete pull box	ea	7	287.00	240.00
High intens elev rwy thrshld light & transformer, rem & salvg	ea	8	51.00	55.00
light & transfrm, inst	ea	10	127.00	15.00
thrshld light & transformer, install	ea	10	127.00	15.00
Med intens semi-flush rwy thresho d light, i	ea	9	126.00	25.00
Elec duct 2-bank 3", sand or sel matl encased	lf	2,375	2.00	3.00
4-bank 4", conc encased	lf	555	7.20	9.00
Exc, common, addit item	cy	4,300	0.82	1.50
Stabl shldr, runway ext:		**32,527**		**40,126**
Base crse, select matl	cy	3,000	1.15	4.50
Liq asph prime coat-MC-1	t	34	41.50	55.00
Bituminous surface crse	t	1,800	12.00	11.00
Asph cement surface crse	t	108	39.50	32.00
Shldr striping & marking	ls	1	1,800	1,500

*Does not incl addit item

N. Y. County and Town Roads

Buck, Seifert & Jost were consulting engineers for 2.2 mi of county and town roads at Lake de Forest dam, in Clarkstown, N. Y.

Spring Valley Water Works and Supply Co. awarded contract to Daniel F. MacNamee & Co., Inc.

1C	Daniel F. MacNamee & Co., Inc., New Rochelle, N. Y.	$739,284
2	Sam Braen Const. Co., Wyckoff, N. J.	902,744
8	Union Bldg. & Const. Corp., Passaic, N. J.	1,381,981

Bids: 1-7-55 Items	Unit	Quantity	Unit Prices 1C	2
Exc & embankment	cy	340,500	$0.67	$0.80
Conc masonry, cl A conc	cy	2,190	65.10	82.50
cl B	cy	30	63.00	107.50
Steel reinf, add or omit	lb	3,000	0.17	0.20
CM culv P, fh&i, 12"	lf	100	9.45	5.00
18"	lf	75	15.75	7.00
48"	lf	40	21.00	15.00
Pvmt furn matl & const: fine grade	sy	30,800	0.21	0.10
fndn course gravel	cy	7,700	3.30	2.85
bottom course	cy	3,420	8.75	7.95
bituminous matl	gal	61,580	0.175	0.13
asphalt concrete	t	4,270	10.00	9.90
Furn & const: conc guard posts	ea	1,215	8.93	9.00
flex-beam guard rail	lf	15,070	2.57	2.85
inlet gratings	ea	10	63.00	100.00
Riprap, f&p: grav base & stone	sy	60,150	3.15	4.55
culvert invert paving	cy	190	8.40	5.00
Strawtwn Rd brg, compl	ls	1	2,100	10,000
Seeding	ac	2.2	630.00	550.00
Cleanup	ls	.....	3,150	1,000

Highway Price Index, Composite Standard Mile

U. S. Bureau of Public Roads, 1925-29 = 100

	4Q '53	2Q '54	3Q '54	4Q '54
Composite	156.9	151.1	149.2	152.4
Excavation, common	102.3	100.9	101.4	100.0
Pavement, concrete	169.5	163.7	159.2	167.7
Structures	245.0	229.1	229.9	226.8
Quantity and bid prices used				
Excavation, common, 17,491 cu yd	$.036	$0.35	$0.36	$0.355
Pavement, concrete, 3,726 sq yd	3.76	3.63	3.53	3.72
Structures:				
Reinforcing steel, 16,000 lb	0.123	0.115	0.117	0.115
Structural steel, 4,325 lb	0.175	0.167	0.167	0.158
Structural concrete, 68 cu yd	54.48	50.61	50.64	50.40

Higher Paving Costs Raise Road Prices

A 5.4% increase in prices bid on concrete pavement is responsible for a 2.1% rise in the Bureau of Public Roads Composite Mile Bid Price Index during the fourth quarter of 1954. This ends the 10.1% decline in bid prices for federal-aid highway projects which began in the second quarter of 1953.

The BPR Composite Mile Price Index for the last quarter of '54 is 152.4, based on 1925-29 = 100. This is 0.2% above first quarter value and is highest level of the index during the year. It is nearly 3% below the fourth quarter of '54 and 8.2% under the first quarter '53 all-time high.

• **Signs of change**—The first signs of a possible new uptrend in federal-aid highway prices came in the third quarter of '54 when unit prices bid on common excavation, reinforcing steel and structural concrete increased slightly. But a drop in concrete pavement prices offset these advances and pulled the composite mile index to its 1954 low of 149.2.

Curiously, the fourth quarter trend was almost an exact reversal of the third quarter trend in prices for the different bid items included in the index.

Pavement prices rose sharply to their highest level of '54 while common excavation and reinforcing steel dropped back to their second-quarter level and structural concrete prices declined below both the second and third quarter.

An additional surprise performance in the fourth quarter was the drop in structural steel bid prices which had remained steady between the second and third quarters. Structural steel bids in the last quarter of '54 averaged the lowest since 1950.

• **Hard to figure**—This rapid reversal in the trends of four out of the five bid items used to compute the BPR index, muddy the water so that it's hard to spot a definite trend for the near future. The fact that materials prices, equipment prices and labor rates have been increasing while at the same time bid prices have declined to the lowest level in almost three years means that contractors have already squeezed a lot of productivity and profit-trimming into their bids.

A few, but an increased number of contractors have squeezed themselves into the failure column.

The question is: How much lower, if any, can bids go? One sure bet is that contractors can't continue to absorb materials price increases and higher labor costs. They've already used up many of their opportunities for cutting their costs.

With the outlook for higher materials prices as well as more wage hikes in '55, the Composite Mile Price Index should show a gradual rise this year on top of the increase that already has been recorded for the fourth quarter of 1954.

(*B&F continued on page 68*)

Unclassified Construction Showed Ups, Downs

Dollar volume performance of ENR's unclassified contract reporting showed big gains in the public category, declines in the private work.

Gains in public unclassified work reflected major gains in military construction of airports, for example, while the drop in private work was a function of a drop in pipeline and transmission line construction (table). Despite the drop, however, private unclassified for 1954 was higher in some categories than in 1952.

The gain in military airport contracts reported was almost entirely in construction and reconstruction of runways and taxiways; contracts for buildings such as hangars and housing declined. State and municipal public works jumped most in the construction of subways and tunnels—which accounted for almost all of the rise over 1953 totals.

Airports, pipelines lead unclassified in '54

Federal airports increase and pipelines are high although lower than '53; state and municipal unclassified sets record high; total public and private is third highest on record

Private	1952	1953	1954
Transmission Lines	$85,428,000	$54,233,000	$39,082,000
Pipelines	185,565,000	525,933,000	379,146,000
Railroads	35,553,000	39,501,000	12,296,000
Telephone	41,686,000	22,783,000	20,152,000
Drive-in Theatres	6,807,000	2,938,000	7,786,000
Radio	5,154,000	15,899,000	5,833,000
Airports	20,870,000	9,786,000	1,145,000
Other	145,737,000	186,096,000	119,558,000
Total Private	528,800,000	857,169,000	584,998,000
Public—Federal			
Airports, Airbases	96,673,000	125,821,000	171,806,000
Hangars, Buildings	242,457,000	248,402,000	240,620,000
Airport Housing	99,797,000	25,736,000	28,240,000
Airport Facil. & Util	128,724,000	85,179,000	95,556,000
Shipyards	33,707,000	38,627,000	5,787,000
Other	113,070,000	68,516,000	94,000,000
Total Federal	714,428,000	592,281,000	636,009,000
Public—State & Municipal			
Airports	46,400,000	41,251,000	25,904,000
Subways, Tunnels	25,360,000	36,310,000	92,084,000
Other	68,510,000	135,483,000	125,570,000
Total State & Mun	140,270,000	213,044,000	243,558,000
Total Public	854,698,000	805,325,000	879,567,000
Total Unclassified	$1,381,498,000	$1,662,494,000	$1,484,565,000

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National Brick Co., Terra Cotta, D. C.

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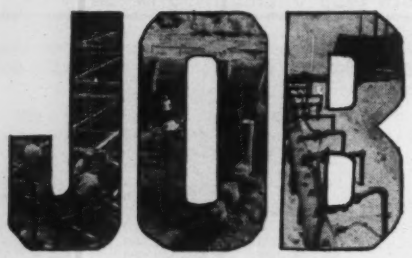

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British Builders Buy In Canadian Construction Firm

A trio of major British engineering and construction firms this week had established a firm beachhead in the Canadian construction industry, with acquisition of controlling interest in Commonwealth Construction Co., of Vancouver.

According to official comments from the purchasing firms—and on their records of previous work—the new group will turn Commonwealth in the direction of heavy construction, with particular interest in tunnel and hydro projects.

Purchasers are: Edmund Nuttal Sons and Co. of London; J. L. Kier & Co. and F. G. Minter, Ltd. Nuttal, a leading British civil engineering and contracting firm, has built the Mersey Tunnel and Claerwen Dam in the British Isles; Kier specializes in design and construction of reinforced concrete structures; Minter is also a building contractor.

Air Vice Marshal Richard Collard, who headed airfield construction for the RCAF during World War II will continue as president of Commonwealth under terms of the purchase of control.

Georgia Law Beefs Up Rural Road Program

Georgia's Gov. Griffin has signed into law a measure that provides for the setting up of a State Rural Roads Authority, empowered to issue revenue bonds up to $100 million to finance rural road projects.

Under the new law, a five-member authority will issue bonds to finance the rural projects, backing the bonds with revenues from rentals to be paid by the State Highway Department. (Part of the money now going to counties for road maintenance will be diverted to pay rentals.)

The authority's right to issue bonds without receiving specific approval from the governor has been limited to $30 million.

Railroad to Enter Pipeline Construction

Officials of the Southern Pacific Railroad said this week the line is preparing to build a $30-million pipeline for transportation of refined petroleum products.

SP president D. J. Russell said plans call for construction of about 800 mi of pipelines from both the Los Angeles and El Paso refinery areas to Phoenix and Tucson. The line would generally follow the railroad's right-of-way. Pipe will be 6 in. in diameter from Watson (Los Angeles) to Colton in the Imperial Valley; 12 in. from Colton to Phoenix and 8 to 10 in. from Phoenix to El Paso.

Construction bids are due to be called in 90 days. Bechtel Corp., San Francisco, is doing engineering and design work; the railroad has formed a new company, known as Southern Pacific Pipe Lines, Inc., to operate the new line.

Business Briefs . . .

• **Won't build**—Olin-Mathieson Chemical Corp. won't build that $20-million cellophane plant at Red Bluff, Calif., company officials have announced, though they gave no official reason for the decision. The company failed to pick up its option on an industrial site already selected.

• **Financing**—If all goes well with proposed legislation now being readied, Michigan voters will be asked April 4 to approve establishment of a $200-million revolving fund, administered by the state, to aid local school districts in financing construction. Details of the proposal await legislation.

• **Space demands**—Evidence of continuing demand for office space is shown in an announcement that all of the 1,300,000 sq ft of space in the huge Socony-Vacuum Building in New York's midtown has been rented, a full year before scheduled completion of the structure.

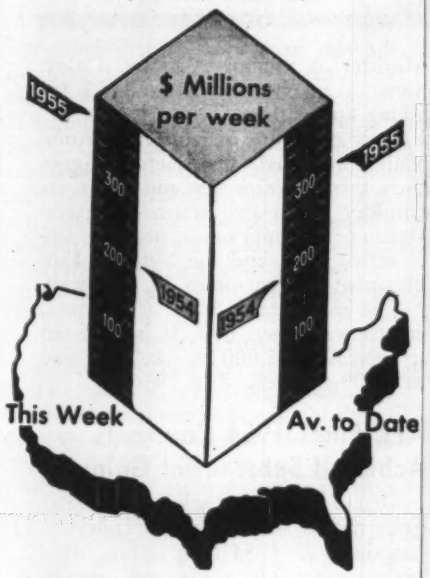
• **Cement earnings**—Two cement companies reported rises in earnings for 1954 up by identical percentages. Consolidated Cement Corp. and General Portland Cement Co. both reported a 31% rise. In dollars, Consolidated earned (net) $1,022,867; General $6,833,256.

• **Building plans**—Three companies plan major plant construction: Celanese Corp. of America will build an $8-million laboratory at Charlotte, N. C.; American Brass Co., a $13-million mill near Los Angeles; Jones & Laughlin a new continuous galvanizing plant at Pittsburgh.

• **Hold plywood price**—U. S. Plywood Corp. will extend to June 30 its guarantee against increases in the basic carload mill prices of Douglas fir plywood—excepting certain sheathing items. The company's price list is based on $85 per thousand board feet for the basic ¼ in. ad grade.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 9 wks 1955	Cumulative 9 wks 1954	% chge
Federal	$23.6	$290.9	$167.7	+73
State and municipal	124.6	758.1	662.6	+14
Total public	148.2	1,049.0	830.3	+26
Total private	225.0	1,704.4	910.8	+87
U. S. Total	$373.2	$2,753.4	$1,741.1	+58

Contracts by type of work

Waterworks	$2.8	$52.1	$32.8	+59
Sewerage	7.2	64.2	50.5	+27
Bridges	13.5	89.8	84.5	+6
Highways	52.9	292.2	206.5	+42
Earthwork, waterways	1.9	62.0	53.6	+16
Buildings:				
Public, excl. hsg.	32.4	267.7	242.6	+10
Housg., public	14.6	22.6	30.2	−25
Housg., private	160.9	1,038.0	456.6	+123
Commercial	34.1	217.8	174.8	+25
Industrial	21.2	371.2	233.6	+59
Unclassified	31.7	275.8	166.4	+66
Total	$373.2	$2,753.4	$1,741.1	+58

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)

	Week of Feb. 24 1955	Cumulative 8 wks 1955	% chge '54-'55
Corporate securities	$33.7	$429.0	−18
State and municipal:			
All except housing	65.1	563.2	+26
Housing	3.2	35.6	+70
Federal loans	1.8	16.8	−13
Federal aid	...	...	...
Total non-federal	$103.8	$1,044.6	+4
Federal appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	$103.8	$1,044.6	+4

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	2/24	645.69	310.38	135.36
	2/3†	645.24*	310.17*	135.26*
Building cost	2/24	459.48	248.38	130.61
	2/3†	459.43	248.35	130.60
Volume	Jan.	560	228	162
	Dec.	464	189	134

† Official monthly indexes for Feb.
* Revised

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Hawaiian Push in the Making

AFL lays groundwork for major organization drive among island construction forces—longshoremen are target

A major drive to organize Hawaii's construction industry will be undertaken by the Building Trades Department of the AFL. It was mapped out by Richard Gray at the midwinter conference in Miami and is scheduled for a further strategy session later this month in Washington, D. C.

Unsuccessfully attempted in the past and temporarily shelved last year, the projected drive has as its chief target Harry Bridges' one-time CIO international longshoremen's union, now the dominant labor group in the islands.

Representing more than 60,000 workers in the key Hawaiian shipping, sugar and pineapple industries, the longshoremen announced last year that they'd put more time into organizing other industries. As yet, they've made no public move in the direction of the construction industry but are reported to be looking the field over. According to E. J. Kovach, president of Hawaii's Building Trades Council, the AFL is "in a state of defense against great odds."

First phase of the drive will center around construction workers in United States Navy yards, particularly those on Oahu, but AFL officials stressed they won't stop there. "Once we go in, we'll be ready for a show-down fight with Bridges," they said. "It won't be easy but we aim to throw the ILU entirely out of the islands."

Tight-lipped about most details of the drive, union spokesmen have professed deep concern "as Americans" with what might happen in Hawaii in case of an all-out war. They claim Reds in the ILU could paralyze the islands' economy in time of war and cripple an important U. S. outpost.

• **Other goals**—Ultimate goals of the AFL are a ringside seat in the construction headquarters of the Pacific area and elimination of what amounts to a non-union training school for craftsmen, many of whom eventually return to the States.

Bulk of military construction in the Pacific funnels through the islands, still known as "the crossroads of the Pacific." Naval work beyond Hawaii passes through the office of the Director of the Pacific Division at Pearl Harbor. This office now is spending about $25 million a year at Guam and placing contracts for about $15 million a year in the Philippines. Far East construction under its supervision runs between $7 million and $10 million a year under lump-sum contracts with Japanese contractors.

The U. S. Navy's 14th Naval District on Oahu handles Hawaiian construction, averaging between $5 million and $10 million a year. And at the present time the Army and Marine Corps are contemplating expenditure there of additional millions on housing units for personnel.

• **See growth**—When Gray personally visited the Hawaiian scene last fall, he saw an area with "a growing economy."

In addition to the vast sums poured into Pacific construction by U. S. military forces, territorial construction permits have been running about $50 million a year. A privately financed multi-million-dollar apartment building and shopping center and extensive additional resort facilities at Waikiki are under consideration.

Of the islands' 9,000 construction workers, only one out of ten is organized. The result is a fertile field for organization.

• **Not new**—Evolution of present plans has often been disheartening. Failure of previous efforts is generally attributed to lack of a strong man at the helm. Last year, John O'Donnel, international representative of the carpenters union, spearheaded a drive (ENR Sept. 23, 1954, p. 27) centering around the Kaiulani Hotel, Woolworth store and university library projects. Employes breached the picket lines, employers didn't budge and the drive failed. In November Richard Gray and representatives of every major AFL construction union personally surveyed organization prospects. Favorably impressed, they returned to the mainland with recommendations that led to the green light flashed at Miami.

Employment Agencies Out Of Canadian Seaway Picture

Private employment agencies, setting up shop to get jobs for construction workers seeking employment on the St. Lawrence Power Project, have been put out of business by Ontario's Minister of Labor, Charles Daley. Some were charging $1 and $3 for taking applications.

Only one form of recruiting is officially recognized. Contractors engage their own labor forces and get their employes from two sources: Ontario Hydro's personnel office, near the site of actual work, and the National Employment Service office in Cornwall.

The construction force at the present time numbers 600. It is expected to increase to 2,000 by next fall, and to 4,000 by the end of 1956.

AFL Finds 1954 Contracts Achieved Substantial Gains

Organized labor achieved greater gains in real wages through collective bargaining in 1954 than in any other postwar year. This is the conclusion of AFL economists after completing an analysis of last year's CIO, AFL and unaffiliated union contracts.

Wage increases were found to be "almost entirely over and beyond the amount needed to compensate for rises in the cost of living." Of the increases won:

• Two-thirds fell between 5 and 9 cents an hour.

• About 45% were for 7 cents or more, with half of these amounting to 10 cents or more.

• Approximately 15% ranged from 1 to 4 cents.

In 10% of the contracts, no increases, or only token increases, were obtained. Such situations were confined largely to chronically depressed or hard-hit areas, industries or companies. In 1952 and 1953, the figure was about 7%.

Major trends for 1954, as disclosed by the survey, included:

• Liberalization and extension of health, welfare and pension plans. These took the form of higher employer and lower employe contributions, increased benefits, extension of coverage and additional types of protection.

• Increases in the number of paid holidays, specific treatment of holidays falling on Saturday, and higher compensation for holiday work.

• More liberal vacation provisions. Characteristic of the trend was the granting of two weeks vacation after one or two years of service, and three weeks after ten or a fewer number of years.

Contracts of one year duration were found to predominate, and an increase was noticed in the spreading of wage increases over a period of time.

Local Can Force Employer To Bargain With Council

The general counsel of the NLRB has ruled that a union local may require an association of construction employers to bargain with a council of unions instead of directly with the local. Only qualification of the ruling, among the last before the counsel's term expired (ENR Jan. 13, p. 24), was that the council not require bargaining on a state-wide basis.

Officially, the decision dismissed an unfair labor practice charge filed by the employers against the local for refusing to bargain except through the council to which it belonged.

The council, when organized, was intended to have state-wide jurisdiction in order to "realize standardization of all our contracts with the employer, wages and working rules that will be the same throughout the state." After its organization, the employers refused to negotiate with the local through the council. Following expiration of its contract, the local struck against all members of the employers' association.

The general counsel found that the local had voluntarily and lawfully selected the council as its bargaining agent and that the council's negotiations would be on behalf of the local and not on a state-wide basis. Hence, he concluded, the local's refusal to bargain directly was not an unfair labor practice.

Labor Briefs . . .

• **Paducah**—A work stoppage occurred last week at the multi-million-dollar Shawnee steam plant under construction by the TVA near Paducah, Ky. Members of the plumbers union picketed the project in protest against TVA's reversal of usual lay-off procedure in reducing the work force as construction nears completion.

• **Prevailing wages**—A bill before the Minnesota legislature would require payment of "prevailing" wages to construction workers on all state and municipal projects. Wage determinations would be made by the State Industrial Commission.

• **Nike dispute**—The NLRB has completed its hearing on the labor dispute which slowed construction of guided missile sites in Baltimore last fall (ENR Nov. 18, p. 158) and the Baltimore Building and Construction Trades Council has consented to issuance of a cease and desist order directed against the unions. Although work had been resumed under a truce, construction is now more than six months behind schedule.

Wanted—
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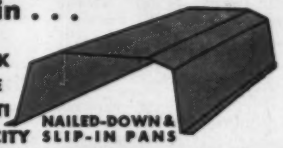

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OFFICIAL PROPOSALS

Bids: April 15, 1955

Power Authority of the State of New York
Advertisement for Proposals

FOR
CONSTRUCTION OF
BARNHART ISLAND POWER PLANT
NEAR MASSENA, ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-5-11001
ST. LAWRENCE CONTRACT NO. 9

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Barnhart Island Power Plant and appurtenant works near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Standard Time on the 15th day of April, 1955 at the Authority's office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are: Estimated:

1,602,500 cu. yds. Embankment and riprap for forebay dike and access roads
260,200 cu. yds. Miscellaneous fills
1,630,200 cu. yds. Earth excavation
415,000 cu. yds. Borrow excavation
195,000 cu. yds. Rock excavation for power plant
142,400 lin. ft. Drill holes for exploration and grouting
890,100 cu. yds. Concrete
18,730 tons Reinforcing steel
2,808 tons Structural and miscellaneous steel
9,174 tons Erection of gates, trashracks, stop logs and cranes
11,000 tons Erection of hydraulic turbines
16,000 tons Handling of generator parts and electrical equipment.

The work shall be completed on or before December 30, 1959.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1207A, New York 7, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars, per initial set and Twenty-five ($25.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid except that guarantee in excess of $2,000,000 will not be required.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

February 11, 1955

U. S. Government

CORPS OF ENGINEERS, U. S. ARMY, PITTSBURGH DISTRICT—Sealed Proposals will be received at this office until 11:00 o'clock a.m., on the 17th day of March 1955, and then publicly opened, for Grading and Drainage Structures, Relocation of State Highway 7, New Cumberland Locks and Dam, Ohio River. Work to include construction of Water Intake and Discharge Structures through relocated Highway. Deposit on Plans $15.00. Further information on application at 1027 New Federal Building, Pittsburgh, Pa.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4359), will be received at Kennewick, Washington, until March 22, 1955, for furnishing labor and materials for Prosser Diversion Dam alterations and Chandler Canal enlargement, Station 1+93.7 to Station 128+80, Kennewick Division, Yakima Project, Washington. Location near Prosser, Washington. Principal items are 105,000 cu. yds. excavation; 2,290 cu. yds. concrete construction; various items installing and remodeling revolving fish screens; various items furnishing and installing gates and miscellaneous metalwork; and other work. Completion time 250 days. For particulars, address Bureau of Reclamation, Kennewick, Washington; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: March 22, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-18

Proposals are invited for Contracts Nos. N-18, N-18A, N-18B and N-18C, which involve the construction of the concrete decks, and other work in connection therewith and incidental thereto, for the Southeast Viaduct, extending from the Avenue E Interchange to the vicinity of Brown Place (Contract No. N-18A); for the five bridge structures extending from Linden Avenue to Phillip Street, namely, Linden Avenue Overpass, New York Port of Embarkation Overpass, Lehigh Valley Railroad Overpass, Ramp B & C Overpass and Central Railroad of New Jersey Overpass (Contract No. N-18B); and for the Bayview Viaduct, extending from the Caven Point Road Interchange to Bayview Avenue (Contract No. N-18C); all in Jersey City, Hudson County, New Jersey, and all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike. Contract No. N-18 comprises all the work required under Contracts Nos. N-18A, N-18B and N-18C.

The principal items of work for Contracts Nos. N-18A, N-18B and N-18C include:

	Contract No. N-18A	Contract No. N-18B	Contract No. N-18C
Concrete, Cu. Yds. ...	7,500	4,800	2,900
Reinforcement Steel, Lbs.	1,550,000	1,100,000	580,000
Metalwork for Drainage Systems, Lbs.	225,00		
Erecting Metal Railing Lin. Ft.	6,770	3,430	3,300

Principal items of work for Contract No. N-18 equal the sum of the quantities listed for Contracts Nos. N-18A, N-18B and N-18C. If a bidder submits a proposal for Contract No. N-18, he must also submit proposals for Contracts Nos. N-18A, N-18B and N-18C in order that the Authority may equitably compare proposals.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Standard Time on the morning of March 22, 1955 at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after March 2, 1955 at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen and Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

March 1, 1955

Bids: March 30, 1955

Gideon Putnam Hotel Geyser Park, Saratoga Springs, N. Y.

EMPLOYEES DORMITORY

Separate sealed proposals covering Construction, Heating, Sanitary and Electric Work for Employees' Dormitory Gideon Putnam Hotel, Geyser Park, Saratoga Springs, New York, in accordance with Specifications 10-C, 10-HV, 10-S and 10-E and accompanying drawings, will be received by the Saratoga Springs Authority at its offices in the Administration Building, Geyser Park, Saratoga Springs, N. Y., until 2:30 P.M. Eastern Standard Time on Wednesday, March 30, 1955, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check, made payable to the Saratoga Springs Authority, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The Saratoga Springs Authority reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract and a separate bond for the payment of laborers and materialmen in the sum of 100% of the amount of the contract.

Drawings and specifications may be examined free of charge at the office of the Saratoga Springs Authority, Administration Building, Geyser Park, Saratoga Springs, New York, and at the offices of the Architect, Kenneth G. Reynolds and Associates, 143 Washington Avenue, Albany, New York.

Drawings and specifications may be obtained at the above named office of the Saratoga Springs Authority, by making a deposit for each set as follows: Construction $20.00, Heating $10.00, Sanitary $10.00, Electric $5.00 or by mailing such deposit to the Saratoga Springs Authority at the above address. Checks should be made payable to the Saratoga Springs Authority. Proposal blanks and envelopes will be furnished without charge.

OFFICIAL PROPOSALS

Bids: March 24, 1955

Construction of Improvements to the Sanitary Sewerage System

NOTICE TO BIDDERS

Sealed bids will be received by the Salisbury Incinerator and Sewage Treatment Plant Commission at the City Hall, Salisbury, Maryland, until 2:00 P.M., E.S.T. Thursday, March 24th, 1955, for furnishing all labor, materials, and equipment and performing all work necessary for the construction of proposed improvements to the sanitary sewerage system of Salisbury in accordance with the following schedules:

Schedule B. All work in connection with the construction of the south side pumping station and force main; water main extensions; units of the treatment plant required for primary treatment (namely, the detritor, clariflocculator, sludge digesters, sludge drying beds, and control building); and site improvements.

Alternative bids are required under this schedule in connection with the elimination of glass covers from 25% and 50% of the sludge drying beds.

Schedule C. All work in connection with the construction of units of the sewage treatment plant required for secondary treatment (namely, the biofilters and final clarifier) and site improvements.

Copies of the contract documents may be examined at the office of Col. Ernest L. McLendon, Executive Secretary to the Mayor of Salisbury, located in the City Hall, or may be obtained from the office of Clarke Gardner and Percy Sterling, Consulting Engineers, Calvert and Bond Streets, Salisbury, Maryland, upon deposit of $35.00 for each set. If the documents are returned in good order within 30 days after the opening of bids, the full amount of the deposit for one set will be returned to each actual bidder. The deposits of actual bidders for additional sets, and of non-bidders of all categories will be refunded with a deduction of $25.00 per set to defray the reproduction cost of the documents. No deposit or any portion thereof will be refunded if the documents are not returned within the time stated.

Bids may be submitted on either or both schedules, at the bidder's option.

Each bid must be accompanied by a certified check or bid bond in an amount not less than 5% of the total of the schedule or schedules bid, excluding alternatives.

An approved surety bond in the amount of 100% of the contract price will be required from the successful bidder or bidders to insure the faithful performance of the work.

No bidder may withdraw his bid within 45 days after the actual date of the bid opening.

The Commission reserves the right to consider informal any bid not prepared and submitted in accordance with the provisions of the contract documents, and may waive any informalities in or reject any and all bids.

SALISBURY INCINERATOR AND SEWAGE TREATMENT PLANT COMMISSION
Fred A. Grier, Jr., Chairman

February 15, 1955

OFFICIAL PROPOSALS

Bids: March 10, 1955

Contract No. P-5

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

PENNSYLVANIA RAILROAD'S 25TH STREET OVERPASS AND ROADWAY GRADING PASSYUNK AVENUE TO 24TH STREET, PHILADELPHIA, PENNSYLVANIA of the Bridge over the Delaware River connecting Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey

Sealed bids will be received for Pennsylvania Railroad's 25th Street Overpass and Roadway Grading Passyunk Avenue to 24th Street, Philadelphia, Pennsylvania over the Delaware River Port Authority, Adminis-Philadelphia, Pennsylvania and Gloucester, New Jersey, known as Contract P-5, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P. M., (Eastern Standard Time), March 10, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $35,000.00 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

Bids: March 21, 1955

State of Connecticut Highway Department

NOTICE TO ALL CONTRACTORS:

Sealed bids for the construction of the following project will be received by the State Highway Commissioner in Room 527 at the State Office Building in Hartford, Connecticut, until 2:00 P.M., E.S.T., Monday, March 21, 1955, then at said office or at such place at that time designated, publicly opened and read.

Federal-Aid Project U-150(2)

Towns of Hartford and East Hartford 63-103:—Substructure for State Street Bridge over Connecticut River. The project consists of the construction of the two abutments, piers 1 to 9 and piers 5R and 5L for connector ramps on the Hartford side of proposed bridge. Engineer—E. B. Burdick, District #1, Hartford.

The minimum rates of wages to be paid to the various classifications of labor are shown in the Special Provisions of the above project.

The minimum rates of wages to be paid labor of the various classifications shall be in accordance with the current schedule of wages established by the State Labor Commissioner, as provided in Section 2206 of the General Statutes of the State of Connecticut, Revision of 1949, as amended by Public Act No. 9 of the Special Session of March 1950 entitled: "Rates of Wages for Work on State Highways" but, in no case less than the minimum shown for the different grades of labor on the above projects.

Plans and specifications for the above project may be examined in Room 527, State Office Building, Hartford, and in the four district offices at Hartford, Norwich, New Haven and New Milford. All proposals must be obtained in Hartford.

NOTE: Contractors wishing to receive plans for their own use must obtain them in Room 527, State Office Building, Hartford, upon payment by check made payable to the Treasurer, State of Connecticut, as follows:

		Conn.	
Hartford-	Cost	Sales Tax	Total
East Hartford	$5.76	$ .12	$5.88

All bidders are required to inform themselves fully of the conditions relating to the construction and labor under which the work will be or is now being performed, and the contractor must employ, as far as possible, such methods and means in the carrying out of this work as will not cause interruption or interference with any other contractor.

NOTE: Surety Company Bond on form furnished by the Highway Department for at least one-third of the amount of the bid must accompany each proposal, unless the contractor shall have filed with the office an annual proposal bond; certified checks will not be accepted. The State Highway Commissioner reserves the right to reject any and all bids.

G. Albert Hill
State Highway Commissioner

February 21, 1955

Bids: March 15, 1955

Construction of Water Treatment Plant

Sealed bids for the construction of Water Treatment Plant for the Williamson Water District will be received by the Town Board of the Town of Williamson at the Town Office in the Fire Hall, Williamson, New York until 4 p.m. o'clock E.S.T. on the 15 day of March, 1955.

Bidding forms can be obtained and plans and specifications examined at the office of the Town Clerk at Williamson, New York or the office of William S. Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications may be obtained upon the payment of twenty dollars ($20.00) for each set, which will not be refunded.

The work consists of the construction of addition to the Water Treatment Plant and Pumping Station at Pultneyville, New York capacity of additional two million gallons per day.

LESLIE LAWRENCE
TOWN CLERK

February 24, 1955

Bids: March 17, 1955

New Jersey Turnpike Authority

CONTRACT NO. W-2

Proposals are invited for Contract No. W-2 which involves grading, drainage, paving, structures and other incidental work from Interchange No. 4 (Camden-Philadelphia) to Interchange No. 6 (Pennsylvania Turnpike Connection) in Burlington County, New Jersey, all in connection with the construction of the Widening of the New Jersey Turnpike.

The principal items of work include:

Roadway Excavation	473,600 cu. yds.
Borrow Excavation	206,000 cu. yds.
4" Topsoiling	792,200 sq. yds.
Asphaltic Concrete Pavemer	271,500 sq. yds.
Asphaltic Concrete Pavement, Resurfacing	3,190 tons
Type F Shoulder	323,900 sq. yds.
Curbs	31,280 lin. ft.
Concrete	6,125 cu. yds.
Reinforcement Steel	770,900 lbs.
Transport & Erect Fabricated Structural Steel	735,000 lbs.
Cast-in-place Concrete Piles	11,620 lin. ft.
Underdrains	20,800 lin. ft.
Storm Drains	36,654 lin. ft.
Gutters	16,530 sq. yds.
Guard Rail	44,780 lin. ft.
Demolition of Concrete	640 cu. yds.

Proposals will be received at the New Jersey Turnpike Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock, Eastern Standard Time on the morning of March 17, 1955, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined at the office of the Authority and at the offices of the Consulting Engineers, De Leuw, Cather & Brill, 202 East 44th Street, New York 17, New York and 99 Main Street, Hightstown, New Jersey. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

February 24, 1955

Change in Bid Date

Bids: March 25, 1955

Waterworks Improvements

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing materials and labor for constructing waterworks improvements for the City of Chillicothe, Ohio, will be received by the Service Director at the Council Room in the City Hall, Chillicothe, Ohio, until twelve o'clock (12:00 noon, Eastern Standard Time), March 25, 1955.

The work consists of furnishing and installing Water Distribution System Improvements and Expansion including water main extensions, reinforcing mains, fire hydrants, valves, valve boxes, booster pump station improvements, elevated tank foundation and altitude valve vault; Elevated Tank and Appurtenances; Improvements in Water Treatment Plant including treating tanks, sludge room, chemical feeder lines and carbonation system. The work has been divided into three contracts as follows:

CONTRACT 2—WATER DISTRIBUTION SYSTEM IMPROVEMENTS AND EXPANSION
CONTRACT 3—ELEVATED TANK AND APPURTENANCES
CONTRACT 4—WATER TREATMENT PLANT IMPROVEMENTS

Each proposal shall be addressed to the Service Director of the City of Chillicothe, Ohio and endorsed "Proposal" with the Contract number and its title. Each proposal shall be accompanied by a certified check on a solvent bank drawn payable to the Treasurer of the City of Chillicothe, Ohio or in lieu of a certfiied check bidders may furnish a bid bond satisfactory to the City, in an amount equal to ten percent (10%) of the bid price, said check to be forfeited to the City of Chillicothe as liquidated damages in case of failure on the part of the successful bidder to execute the contract and furnish satisfactory surety bond within ten (10) days after acceptance of the proposal.

The check will be returned to the successful bidder if the contract is executed and the necessary bond furnished within the specified time limit, and the checks of the unsuccessful bidders will be returned to them after the award is made.

Blank proposal forms, detailed plans and specification may be obtained from Alfred LeFeber & Associates, 2933 Woodburn Avenue, Cincinnati 6, Ohio upon making a deposit in the amounts indicated in the following:

CONTRACT 2—$25.00
CONTRACT 3—$ 5.00
CONTRACT 4—$15.00

For Contract No. 2 and Contract No. 4 the full amount of the deposit—for one set of documents and one-half the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City of Chillicothe, Ohio, and who also returns the plans and specifications and additional sets in good condition to the Engineer within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, sub-contracts and others who do not submit formal proposals to the City of Chillicothe, Ohio, will be refunded one-half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition within ten (10) days after the opening of bids. No refund will be made for documents received after this ten (10) day period.

No refund will be made for the return of documents for Contract 3.

This project, being for a governmental unit, is exempt from Ohio Sales Tax under State Laws. Therefore, the project is exempted from Sales Tax on all materials, equipment and supplies actually incorporated into the work.

The Service Director reserves the right to reject any and all bids and to hold all bids for forty (40) days before final acceptance thereof.

City of Chillicothe, Ohio
By: Hugh N. Thompson
Service Director

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Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. for March 17th issue closing March 7th.

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Positions are open to capable engineers and draftsmen who can design and/or prepare plans and specifications for complete industrial plants, all related structures, and building equipment falling within the following categories:

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Full particulars as to education, experience, and compensation desired should be given in first letter.

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For company's Equipment Engineering Division located in New York City. Minimum five years' experience designing, selecting and specifying all types of maintenance and shop equipment.

Must know general machine shop practice, garage operations, engine rebuilding, power plant operations, refinery and oil field maintenance equipment sufficiently to be capable of preparing specifications for manufacture, economic and engineering analysis for selection and guidance for tests and inspection of purchased equipment.

Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 13

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

DRAFTSMEN

Mechanical Draftsmen for general plant engineering work in large pulp and paper mill. Chemical plant experience in process and piping drafting desirable. Positions permanent. All employee benefits, insurance, vacations, retirement, etc. Send Resume to

Director of Personnel
WEST VIRGINIA PULP & PAPER CO.
LUKE, MARYLAND

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED: BRIDGE & Highways designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-5389, Engineering News-Record.

BRIDGE DESIGNER, Richmond, Virginia, graduate civil engineer, several years experience railway bridge designing. Give age, education, experience, reference, salary. P-5613, Engineering News-Record.

WANTED: ARCHITECTURAL draftsman for school and church drafting, building and structural design. Need experienced man qualified to take responsibility. Write P. O. Box 204, Lancaster, Ohio giving qualification, experience and salary or phone Lancaster 2243W for appointment.

DRAFTSMAN — EXPERIENCED structural steel detailer and checker for building construction. Permanent. All employee benefits, paid vacation, insurance, etc. Submit resume and salary desired. Barber & Ross Company 5th & V Sts., N.E. Washington, D. C.

EXPERIENCED STRUCTURAL steel draftsmen wanted by established Southern fabricator. Permanent jobs. Pay rate open, depending on experience, ability. Write detailed application giving full information, salary expected. P-5620, Engineering News-Record.

CHIEF CEMENT Chemist wanted with experience as Chief or Assistant Chief Chemist in a Portland Cement Manufacturing Plant or equivalent. Attractive proposition awaits the right party. Location, middle eastern states. P-5582, Engineering News-Record.

SMOKE & HEATING Plant Inspector Wanted. $410 a month to start. Annual automatic increases to $475. Later longevity increases. Inspectional and enforcement work on all types of heating plants and ventilating systems; and smoke abatement. Applications accepted until needs of service filled. Residents of Illinois, Iowa, Minn., Mich., and Wis. only. Personnel Division, City Hall, Madison 3, Wis., ALpine 6-8331.

PAVING SUPERINTENDENT for concrete paving project in State of Maryland. Man must be qualified to handle complete supervision of large concrete highway project. Princemont Construction Corp., Silver Spring, Maryland. Phone JUniper 9-1181.

PIPE FOREMAN or concrete foreman. Man capable of handling storm drain pipe gang or concrete paving and curb & gutter gang. Previous experience required. Princemont Construction Corp., Silver Spring, Md. Phone JUniper 9-1181.

GENERAL SUPERINTENDENT experienced chemical and refinery construction for midwestern contractor. Write stating qualifications, previous employment, availability, education, references, and salary expected. P-5696, Engineering News-Record.

(Continued on opposite page)

ENGINEERS

Designers Detailers Draftsmen

for work on

Bridges, Expressways, Turnpikes

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PAID VACATION, SICK LEAVE
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INCLUDE EDUCATON, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
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Specifications and Technical Writer

Engineering degree and responsible experience in writing specifications for heavy construction work. Must have ability to correlate specifications for incidental architectural, mechanical, and electrical phases into complete specifications.

For established engineering consultants with international operations, located on Gulf Coast.

Send complete resume, with name and address of three references, and salary requirements to

P-5641, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ASSISTANT CHIEF ENGINEER

Guam, Pacific Island, Project

Must have 10 years' experience in various phases of construction and engineering operations, and be able to supervise and direct the work of others. Graduate Engineer required.

ENGINEERS

Technical and Narrative Reports
Electrical Design
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Write, giving detailed account of experience, education, etc.

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P-5434, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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P-4753, Engineering News-Record
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(Continued from opposite page)

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WANTED — ERECTION Manager, executive with ability to handle sub contractors, erection division. P-5701, Engineering News-Record.

WANTED—MANAGER, to handle pile-driving division as a sub-contractor for New England outfit. P-5702, Engineering News-Record.

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(Continued on following page)

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(Continued from preceding page)

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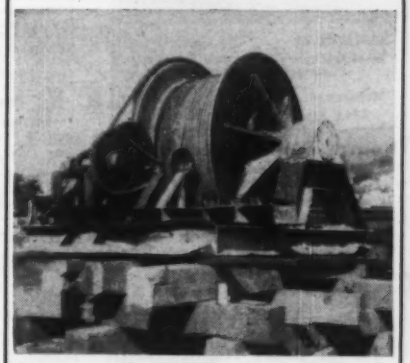

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EDITORIALS

Normal Politics Won't Work

FACING UP TO THE HIGHWAY PROBLEM is going to be a cruel test for Congress because the necessary answer is already on the blackboard: Whatever legislation is adopted must assure a quick start and an early finish of a really big road program concentrated on the interstate system.

Seeking ways to please groups of voters—farmers, city dwellers, the economy-minded, the state autonomists—as might normally be done, will boomerang unless solid roadbuilding progress is forthcoming.

It is this fact that makes opposition to the President's road plan so difficult because the plan is focused so directly on assuring a new high level of progress in roadbuilding. Even the financing proposal, which may contain an element of political strategy in its planned use of tax anticipation bonds that would be outside the federal budget, is so plainly one than can provide the roads we need that only a sure-fire substitute dare be adopted in its place.

The Gore Bill, now before the Senate Public Works Committee as a political answer to the President's plan, has none of this certainty about it. Its proposal is to double present federal aid to $1.6 billion, with the states required to match $1.27 billion of it. Having had difficulty in matching federal aid funds of half this amount, the states are by no means a sure source for this additional road money. Even if they were, the total money available would be short of the needs as estimated by the state highway departments and the Bureau of Public Roads. It would be short in any one year, and it would be even less adequate over the 10-year period that the President's plan envisions as being the maximum to bring our roads up to necessary standards.

The real crux of the matter rests in the fact that we need a whole new system of highways just as soon as we can get it, and no adequate pay-as-you-go plan has yet been seriously proposed to assure that result. Those who have opposed the bond plan on the ground that its interest charges would raise its cost 50% over a 10-year period have still to reckon with the fact that we would nevertheless have the roads we need, while unless we are willing to triple present federal gas taxes, very few miles would be built.

The pay-as-you-go advocates also have to gamble on the chance that there will be no increase in construction costs during the long period that it will take to provide our roads from present revenues. Postponing roadbuilding to a period when costs may be higher would make that type of road plan just as expensive as paying interest charges and having the roads sooner.

There may well be a better plan for roads than the one that the President has proposed. Congress is, of course, duty-bound to seek it. It is also duty-bound—and politically on the spot—to offer a substitute plan that holds equal or better promise of providing the roads we need when we need them. As the President said in his message, there is "inescapable evidence that action, comprehensive and quick and forward looking, is needed." Inescapable, too, is the fact that normal politics will not produce the abnormal action that is necessary.

Power on International Rivers

THE CANADIAN GOVERNMENT'S proposed legislation to bring under federal control all work on international rivers serves to emphasize the need for a new look at the problems raised by plans for power development on streams that cross international boundaries. So many agencies now are involved as to raise question as to which one has, or should have, final say.

The Ottawa government's immediate concern is with the Columbia River, but its new legislation would apply to the Yukon, the Milk, the Red and the St. John Rivers. The St. Lawrence already is under federal control.

What stirred the government's present action was a reported agreement between the province of British Columbia and the Kaiser Aluminum & Chemical Corp. relating to power to be generated at plants in the United States with water to be stored in a Canadian reservoir.

Such an agreement, of course, could have no validity unless approved by the International Joint Commission, which was set up under the Boundary Waters Treaty of 1909. And as the agreement called for delivery to British Columbia of part of the power developed south of the border, it could have no validity without approval by Congress. Finally, approval by the Federal Power Commission would be needed, and possibly approval by the Bonneville Power Administration.

Now the Canadian government proposes by legislation to make certain that this or any similar project is not started without its approval. Equally significant, however, is the report that the Canadian representatives on the International Joint Commission are making a comprehensive study of Columbia River power resources.

Should their findings, as might be hoped, be in the form of a recommended system of development, with such ways of achieving it as might win approval of the U. S. and Canadian governments, the International Joint Commission could then have an overall official plan to which it could relate any private or public power scheme that might be proposed. This would eliminate the need for reopening basic issues as each project comes up for consideration. It would be a great improvement over the present situation.

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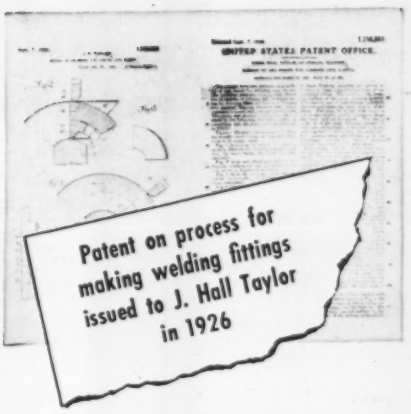

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